Service Manual

Television-Video Cassette Recorder

CHASSIS : CP - 350
PAL/SECAM SYSTEM

MODEL : DVT-20F4PA
20F4FA
21F4LA
2082LA
2182LA

DAEWOO ELECTRONICS CO., LTD.
OVERSEAS SERVICE DEPT.

■CONTENTS

SPECIFICATIONS 2

BLOCK DIAGRAM 4

SAFETY INSTRUCTIONS 5

ASSEMBLY VIEW 6

INSTALLATION AND SERVICE ADJUSTMENT 8

IC OPERATION DESCRIPTION 14

CIRCUIT DESCRIPTION 40

PRINTED CIRCUIT BOARDS 48

TROUBLE SHOOTING CHARTS 49

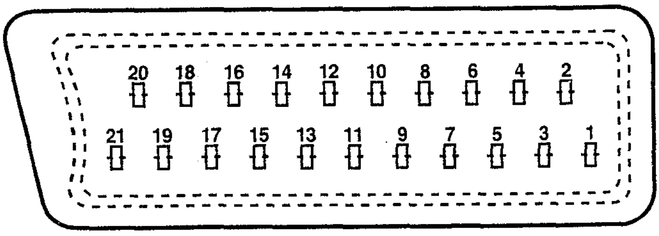
REPLACEMENT PARTS LIST 58

EXPLODED VIEW 89

SPECIFICATIONS

MODEL	DVT-20F4PA	DVT-20F4FA	DVT-21F4LA
Receiving System	PAL-I	PAL-B/G	P/S-B/G, S-L/L'
Mains Voltage	230V AC 50Hz		
Power Consumption	72W Approx.(20 inch) 76W Approx.(21 inch)		
Sound Output	1.5W Approx.(at 60%, 10% THD) x 2		
Antenna Impedance	75 ohm unbalanced		
Tuning System	Frequency Synthesis Tuning System		
Number of Program	99 Programs		
Reception Channel	Refer to the TUNER description		
Remote Control Unit	R-30C(RH400)	R-30C(RC1400)	R-30C(RCT400)
Screen Size (Diagonal)	20" : 480mm 21" : 510mm		
Indication	On Screen Display -Program No. (01-99) -Sleep (10-120, step 10 min) -Mute & Volume -AV1, AV2 -Main menu(Picture, Clock Set, TV Timer, Video Timer, Language,Preset) -Picture Menu(Brightness, Colour, Contrast, Sharpness) -TV Timer Menu(ON Time, PR., OFF Time) -Preset Menu(Full Auto Search, Auto Search, Fine Tuning, VideoPlus+ Preset)		
Terminal	21 Pin EURO SCART		

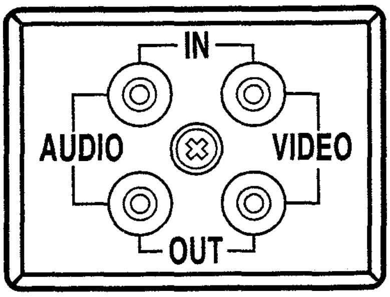
AUX TERMINAL



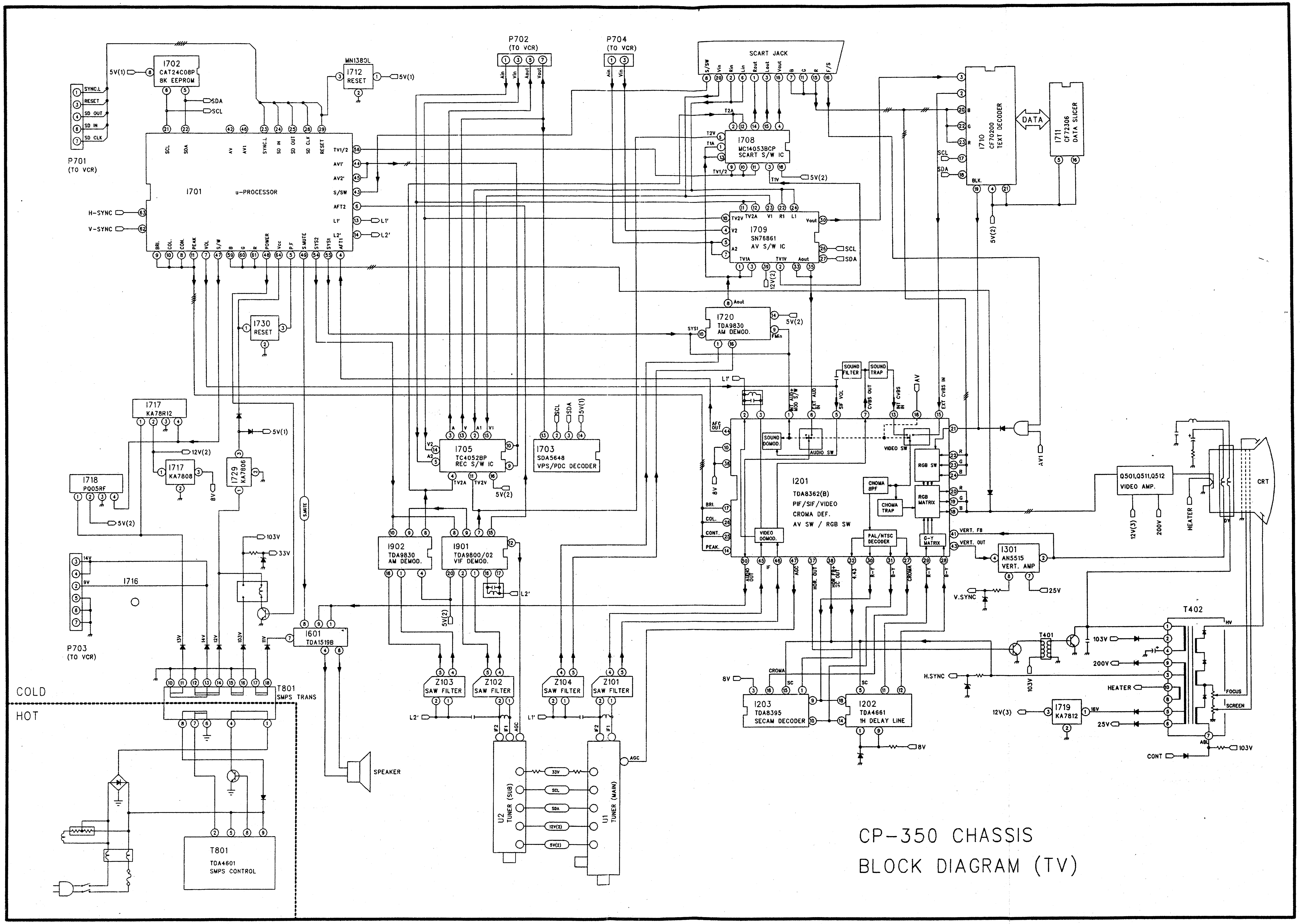
21 PIN EURO-SCART

PIN	Signal Designation	Matching Value
1	Audio Out(linked with 3)	0.5Vrms,Imp<1KΩ (RF 60% MOD)
2	Audio In(linked with 6)	0.5Vrms,Imp>10KΩ
3	Audio Out(linked with 1)	0.5Vrms,Imp<1KΩ (RF 60% MOD)
4	Audio Earth	
5	Blue Earth	
6	Audio in (linked with 2)	0.5Vrms,Imp>10KΩ
7	Blue in	0.7Vpp±3dB,Imp75Ω
8	Slow(Function) Switching	TV:0-2V,PERI:9.5-12V,Imp>10KΩ
9	Green Earth	
10	NC	
11	Green In	0.7Vpp±3dB,Imp75Ω
12	NC	
13	Red Earth	
14	NC	
15	Red In	0.7Vpp±3dB,Imp75Ω
16	Rapid(Blanking) switching	Logic 0:0-0.4V,Logic 1:1-3V,Imp 75Ω
17	Video Earth	
18	Rapid Blanking Earth	
19	Video Out	1Vpp±3dB,Imp75Ω
20	Video In	1Vpp±3dB,Imp75Ω
21	Common Earth	

RCA JACK



BLOCK DIAGRAM


P701
(TO VCR)
SYNC.L
RESET
SD OUT
SD IN
SD CLK
H-SYNC
V-SYNC
1702
CAT24C08P
8K EEPROM
5V(1)
SDA
SCL
MN1380L
1712
RESET
5V(1)
1701
u-PROCESSOR
TV1/2
AV1'
AV2'
S/SW
AFT2
L1'
L2'
P702
(TO VCR)
P704
(TO VCR)
SCART JACK
1708
MC14053BCP
SCART S/W IC
5V(2)
1709
SN76861
AV S/W IC
SCL
SDA
12V(2)
1710
CF70200
TEXT DECODER
DATA
1711
CF72306
DATA SLICER
5V(2)
1720
TDA9830
AM DEMOD.
5V(2)
1730
RESET
1717
KA78R12
12V(2)
1717
KA7808
8V
1729
KA7806
5V(1)
1718
PQ05RF
5V(2)
1705
TC4052BP
REC S/W IC
5V(2)
1703
SDA5648
VPS/PDC DECODER
SCL
SDA
5V(1)
S.MUTE
103V
33V
P703
(TO VCR)
1716
14V
9V
13V
14V
12V
103V
11V
1902
TDA9830
AM DEMOD.
1901
TDA9800/02
VIF DEMOD.
L2'
1601
TDA1519B
SPEAKER
T801
SMPS TRANS
COLD
HOT
T801
TDA4601
SMPS CONTROL
Z103
SAW FILTER
Z102
SAW FILTER
Z104
SAW FILTER
Z101
SAW FILTER
L2'
L1'
U2
TUNER (SUB)
U1
TUNER (MAIN)
33V
SCL
SDA
12V(2)
5V(2)
AGC
1201
TDA8362(B)
PIF/SIF/VIDEO
CROMA DEF.
AV SW / RGB SW
SOUND FILTER
SOUND TRAP
SOUND DOMOD.
AUDIO SW
VIDEO SW
RGB SW
RGB MATRIX
CHOMA 8PF
CHOMA TRAP
VIDEO DOMOD.
PAL/NTSC DECODER
C-Y MATRIX
BRI.
COL.
CONT.
PEAK.
8V
AV1
VERT. FB
VERT. OUT
1301
AN5515
VERT. AMP
V.SYNC
25V
Q501,Q511,Q512
VIDEO AMP.
12V(3)
200V
HEATER
CRT
DY
T402
HV
T401
H.SYNC
103V
200V
HEATER
FOCUS
SCREEN
1719
KA7812
12V(3)
16V
25V
ABL
CONT
103V
8V
1203
TDA8395
SECAM DECODER
CROMA
SC
1202
TDA4661
1H DELAY LINE
8V

CP-350 CHASSIS
BLOCK DIAGRAM (TV)

■ SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION","SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" BELOW.

■ X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION.To avoid such hazards, the high voltage must not exceed the specified limit. The nominal value of the high voltage of this receiver is 25.5KV(21":26.5KV) at max beam current. The high voltage must not, under any circumstances, exceed 27.5KV (21":29.0KV).
   Each time a receiver requires servcing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 9 of this manual. It is recommended the reading of the high voltage be recorded as a part of the service records, It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY Radiation in this TV receiver is the picture tube.For continued X-RAY RADIATION protection,the replacement tube must be exactly the same type tube as specified in the parts list.

■ SAFETY PRECAUTION

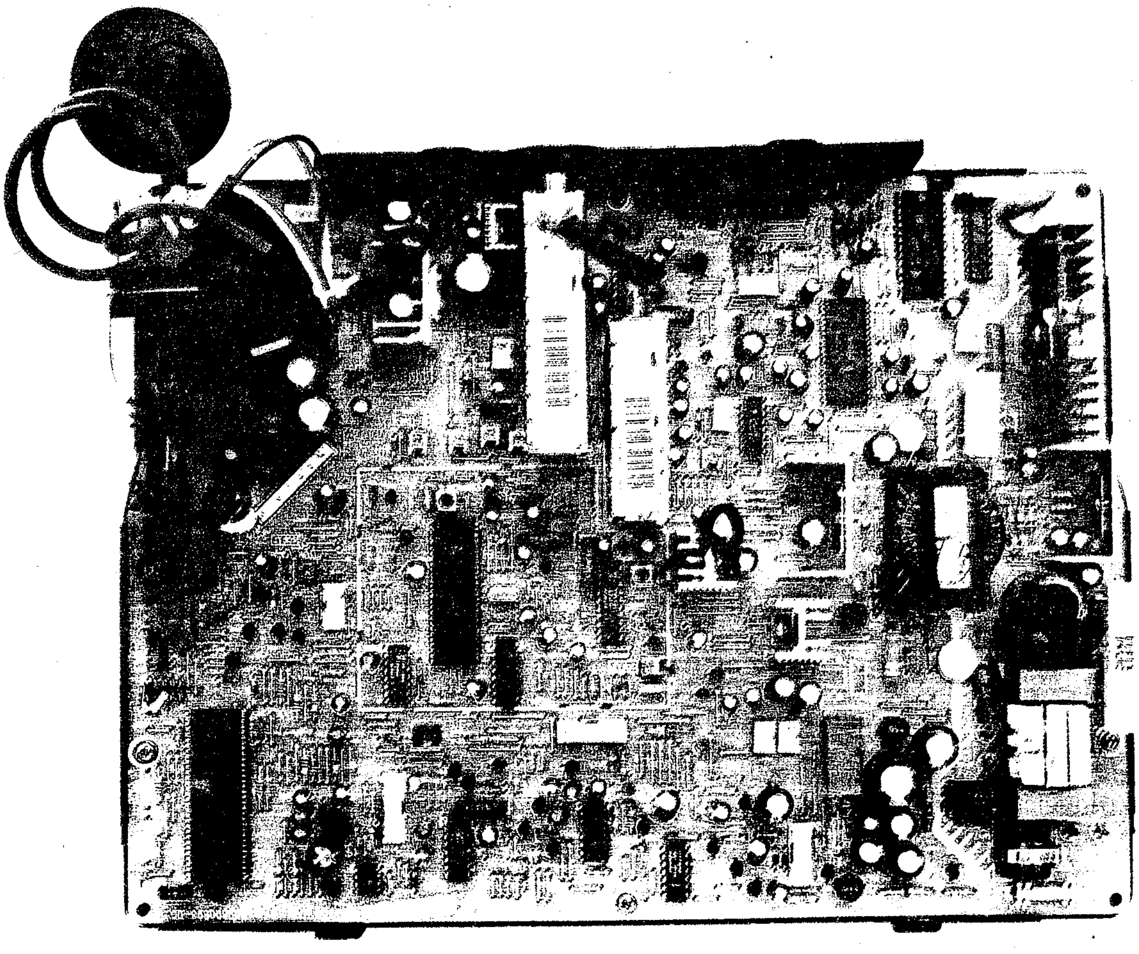
1. Potentials of high voltage are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back board removed involves a shock hazard from the receiver.
   1) Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
   2) Always discharge the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the Replacement Parts List.
3. When replacing a high wattage resistor(oxide metal film resistor)in circuit board, keep the resistor 10mm away from circut board.
4. Keep wires away from high voltage or high temperature components.
5. This receiver must operate under AC230 volts, 50Hz. NEVER connect to DC supply or any other power or frequency.

■ PRODUCT SAFETY NOTICE

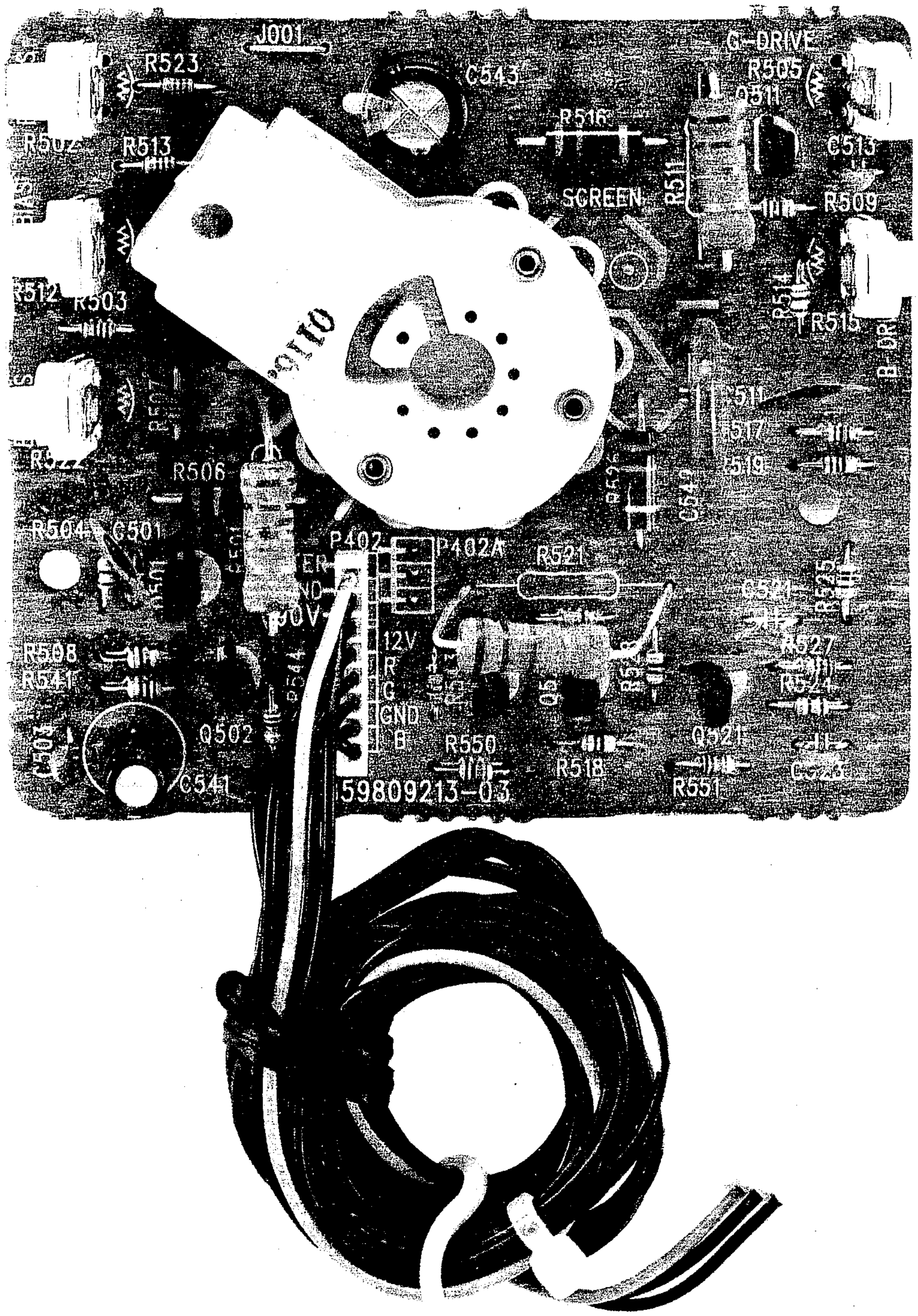
Many electrical and mechanical parts in this have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage,wattage,etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by designated symbol on the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY Radiation.

ASSEMBLY VIEW

MAIN BOARD VIEW



CRT BOARD VIEW


J001
R523
C543
G-DRIVE
R505
Q511
R502
R513
R516
C513
SCREEN
R511
R509
R512
R503
R514
R515
B-DR
R507
C511
R517
R519
R522
R506
C549
R504
C501
C561
P402
P402A
R521
C521
R525
12V
R
G
GND
B
R527
R524
R508
R541
R544
Q502
C503
C541
R550
R518
Q521
R551
C523
59809213-03

■ INSTALLATION & SERVICE ADJUSTMENTS

GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. But, several minor adjustments may be required depending on the particular location in which the receiver is operated. This receiver is shipped completely in a card-board carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into an AC power outlet. Turn the receiver ON and adjust the FINE TUNING for the best picture detail. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain a natural B/W picture.

PROTECTION CIRCUIT CHECK

1. Turn on the receiver.
2. The receiver must be turned off and changed to stand-by mode.

HIGH VOLTAGE CHECK

1. Connect an accurate high voltage metre to the anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum(zero beam current).
3. High voltage should be below 27.5KV(21":29.5KV)

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary. Providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power of the receiver is switched ON.If the set is moved or placed in a different direction, the power switch must be switched off for at least 15 minutes in order to make the automatic degaussing circuit operate properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity,use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2m before disconnecting it from the AC source.

If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

■ DYNAMIC CONVERGENCE ADJUSTMENT

Dynamic convergence (convergence of the three colour field at the edges of the CRT screen)is accomplished by proper insertion and positioning of three rubber wedges between the edges of the deflection yoke and the funnel of the CRT. This is accomplished as follows:

1. Switch the receiver on allow it to warm up for 15 minutes.
2. Apply crosshatch pattern from dot/bar generator to the receiver. Observe spacing between lines around edges of the CRT screen.
3. Tilt the deflection yoke up and down, and insert tilt adjustment wedges 1 and 2 between the deflection yoke and the CRT until the mis-convergence illustrated in figure. 2(A) has been corrected.
4. Tilt the deflection yoke right and left, and insert tilt adjustment wedge 3 between the deflection yoke and the CRT until mis-convergence illustrated in figure. 2(B) has been corrected.
5. Alternately change spacing between, and depth of the insertion of, the three wedges until proper dynamic convergence is obtained.
6. Use a strong adhesive tape to firmly secure latch of the three rubber wedges to the funnel of the CRT.
7. Check purity and readjust, if necessary.

■STATIC (CENTRE) CONVERGENCE ADJUSTMENT

1. Switch the receiver on and allow it to warm up for 15 minutes.

2. Connect the output of a crosshatch generator to the receiver and concentrating on the centre of the CRT screen, proceed as follows:

a. Locate the pair of 4 pole magnet rings. Rotate individual rings (Change spacing between tabs)to converge the vertical red and blue lines.Rotate the pair of rings (maintaing spacing between tabs)to converge the horizontal red and blue lines. (Refer to fig. 1 (A))

b. After completing red and blue centre convergence, locate the pair of 6 pole magnet rings. Rotage individual rings (change spacing between tabs) to converge the vertical red and blue (Magenta)and green lines. Rotate the pair of rings (maintaining spacing between tabs)to converge the horizontal red and blue(Magenta) and green lines.(Refer to Fig. 1(B))

■ COLOR PURITY ADJUSTMENT

For the best result,it is recommended that the purity adjustment is made in final receiver location. If the receiver will be moved, perform adjustment with it facing east. The receiver must have been operating 15 minutes prior to this procedure and the faceplate of the CRT must be at room temperature. The receiver is equipped with an automatic degaussing circuit. But, if the CRT shadow mask has become excessively magnetized, it may be necessary to degauss it with manual coil. Do not switch the coil.

The following procedure is recommended while using a dot generation.

1. Check for correct location of all neck components (See figure. 5).
2. Rough-in the static convergence at the centre of the CRT, as explained in the static convergence procedure.
3. Rotate the picture control to centre of its rotation range, and rotate brightness control to max. CW position.
4. Apply green color signal to produce a green raster.
5. Loosen the deflection yoke tilt adjustment wedges (3), loosen the deflection yoke clamp screw and push the deflection yoke as close as possible to the CRT screen.
6. Begin the following adjustment with the tabs on the round purity magnet rings set together, initially move the tabs on the round purity magnet rings to the side of the CRT neck. Then, slowly separate the two tabs while at the same time rotaing them to adjust for a uniform green vertical band at the CRT screen.
7. Carefully side the deflection yoke backward to achieve green purity. (uniform green screen) Centre purity was obtained by adjusting the tabs on the round purity magnet rings, outer edge purity was obtained by sliding the deflection yoke forward.
   Tighten the deflection yoke clamp screw.
8. Check for red and blue field purity by applying red signal and touch up adjustments, if required.
9. Perform black and white tracking procedure.

■ SCREEN & WHITE BALANCE ADJUSTMENT

1. This adjustment is to be made only after warming up at least 15 minutes.
2. Receive RETMA pattern signal.
3. Set the RGB Bias VR (R522,R512,R502) to minimum.
4. Set the G,B Drive VR (R515,R505)to center.
5. Set the CONTRAST, BRIGHTNESS, COLOR control to MIN, and Sub-bright VR(R013)to CENTER.
6. Rotate the R, G and B Bias VR of the other color which did not appear on the screen clockwise, until a dim white is obtained.
7. Set the CONTRAST, BRIGHTNESS, COLOR control to MAX.
8. Set the G, B Drive VR to obtain the best white uniformity on the screen.
9. Rotate the CONTRAST, BRIGHTNESS, COLOR controls until a dim raster is obtained and touch-up adjustment of RGB Bias VR to obtain the best white uniformity on the screen.

■ SUB-BRIGHTNESS ADJUSTMENT

1. White balance adjustment must proceed this procedure.
2. Set the CONTRAST, BRIGHTNESS, COLOR control to MIN.
3. Rotate the SUB-BRIGHTNESS VR (R013) gradually CCW until the last beam disappears on the screen.

■ VERTICAL HEIGHT ADJUSTMENT

1. Receive RETMA pattern signal.
2. Set the BRIGHTNESS control and CONTRAST control to Max., and the COLOR control to centre.
3. Adjust R011 for the optimum vertical height and over scanning.

■ VERTICAL CENTER ADJUSTMENT

1. Receiver RETMA pattern signal.
2. Adjust R030 so that the vertical center of the picture may be coincident with the mechanical center of CRT.

■ HORIZONTAL CENTER ADJUSTMENT

1. Receive RETMA pattern signal.
2. Adjust R012 so that the horizontal center of the

■ FOCUS VOLTAGE ADJUSTMENT

1. Receive RETMA pattern signal.
2. Adjust the FOCUS VOLUME on the FBT and make the picture on the screen be finest.

■ RF AGC ADJUSTMENT(MAIN)

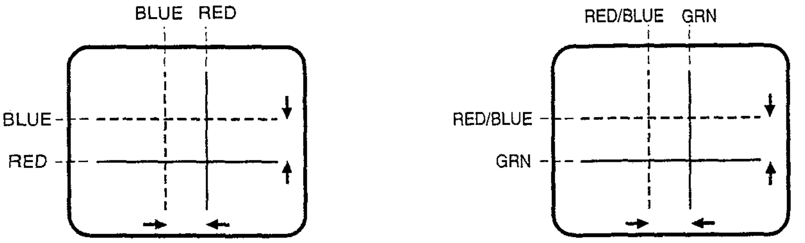
1. Receive PAL COLOR BAR signal in the VHF high band where the strength of signal can be 75dB.
2. Set the CONTRAST control to Max., the BRIGHTNESS control to provide adequate black and gray scales.
3. Connect an oscilloscope to P211.(Tuner AGC point)
4. Maintain the fine tuning on the screen, and adjust R010(AGC DELAY CONTROL VR.) to max.
5. Adjust the VR(R010) max to below 2.2V(FA/LA:2.2V).

■ RF AGC ADJUSTMENT(SUB)

1. Receive PAL COLOR BAR signal in the VHF high band where the strength of signal can be 75dB.
2. Set the CONTRAST control to Max., the BRIGHTNESS control to provide adequate black and gray scales.
3. Connect an oscilloscope to P211.(Tuner AGC point)
4. Maintain the fine tuning on the screen, and adjust R090(AGC DELAY CONTROL VR.) to max.
5. Adjust the VR(R090) max to below 2.2V(FA/LA:1.6V).

■ MAIN B+(+103V) ADJUSTMENT

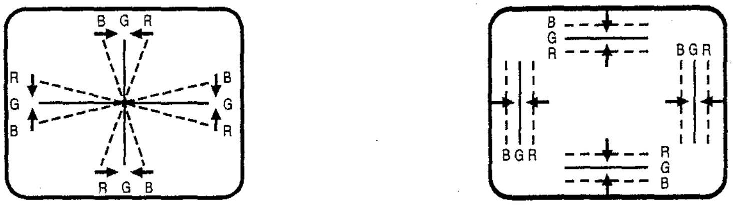
1. Set the picture level to service 1 mode.(Bright:31, Colour:31, Contrast:48, Sharpness:48)
2. Connect DC voltage meter to the P805 and adjust R080 for +103V DC.


BLUE
RED
BLUE
RED
RED/BLUE
GRN
RED/BLUE
GRN

(A)
4-Pole Magnets Movement

(B)
6-Pole Magnets Movement

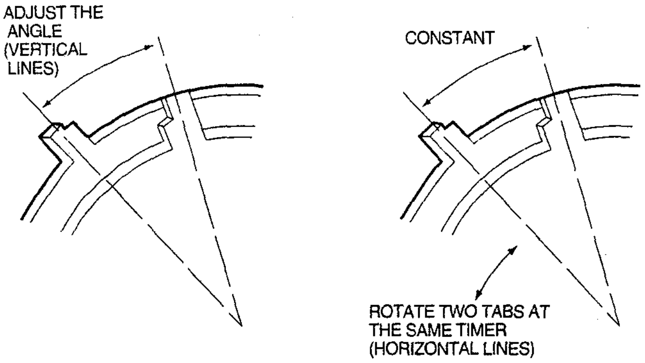
FIG. 1 CENTER CONVERGENCE BY CONVERGENCE MAGNETS


B G R
R
G
B
B
G
R
R G B
B
G
R
B G R
B G R
R
G
B

(A)
Incline the Yoke up (or down)

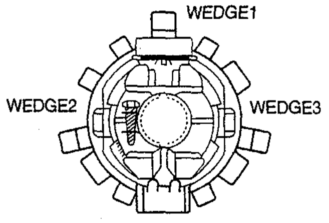
(B)
Incline the Yoke right (or left)

FIG. 2 CIRCUMFERENCE CONVERGENCE BY DEF .YOKE


ADJUST THE ANGLE (VERTICAL LINES)
CONSTANT
ROTATE TWO TABS AT THE SAME TIMER (HORIZONTAL LINES)

ADJUSTMENT OF MAGNETS

FIG. 3 ADJUSTMENT OF MAGNETS


WEDGE1
WEDGE2
WEDGE3

DEFLECTION YOKE REAR VIEW

FIG. 4 RUBBER WEDGE LOCATION

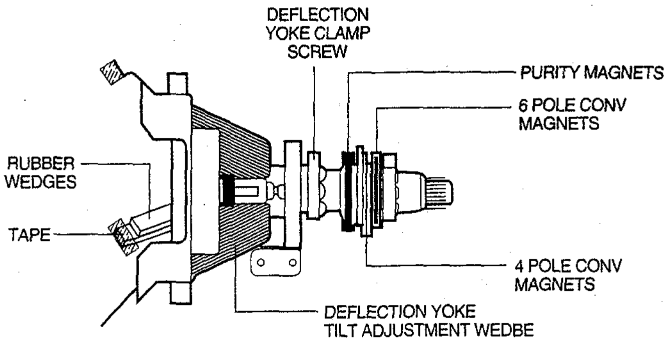

DEFLECTION YOKE CLAMP SCREW
PURITY MAGNETS
6 POLE CONV MAGNETS
RUBBER WEDGES
TAPE
4 POLE CONV MAGNETS
DEFLECTION YOKE TILT ADJUSTMENT WEDBE

FIG. 5 PICTURE TUBE NECK COMPONENT

■ PIF ADJUSTMENT(MAIN)

1. APPARATUS CONNECTION AND PRESETTING

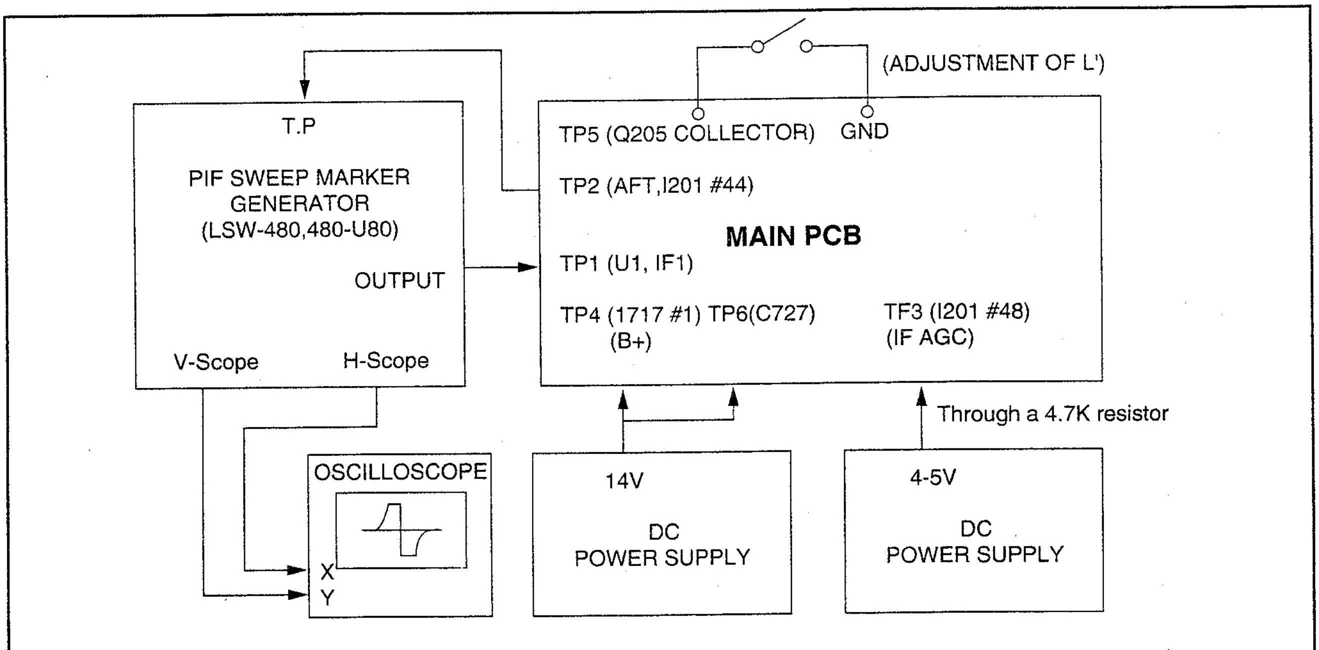
- CONNECTION

1) Connect H-out of LSW-480 to X-axis of the oscilloscope and V-out of LSW-480 to Y-axis of the oscilloscope.
2) Connect the sweep signal output to TP1.
3) Set ATTENUATOR of LSW-480 to 10dB.
4) Supply 12V DC voltage(B+) to TP4 and TP6.
5) Supply 4-5V DC voltage to TP3.

- PRESET

1) Oscilloscope Scaling
   a) Put the scale of X and Y of the oscilloscope to DC level.
   b) Set the horizontal time display to X-Y.
   c) Put the horizontal axis(X) to 1V/div. And the vertical axis(Y) to 2V/div.
2) LSW-480 MARKER FREQ. SETTING.

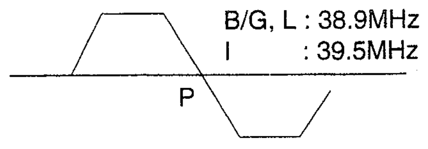
	Fp(n+1)	fs	fc	fp-2	fp	fs(n-1)
B/G,L/L'	31.9	33.4	34.5	36.9	38.9	40.4
I	31.9	33.5	35.07	37.5	39.5	41


(ADJUSTMENT OF L')
T.P
PIF SWEEP MARKER GENERATOR (LSW-480,480-U80)
OUTPUT
V-Scope
H-Scope
TP5 (Q205 COLLECTOR)
GND
TP2 (AFT,I201 #44)
MAIN PCB
TP1 (U1, IF1)
TP4 (1717 #1) TP6(C727) (B+)
TF3 (I201 #48) (IF AGC)
Through a 4.7K resistor
OSCILLOSCOPE
X
Y
14V
DC POWER SUPPLY
4-5V
DC POWER SUPPLY

Connection For PIF Adjustment

2. ADJUSTMENT OF AFT(B/G, I, L)

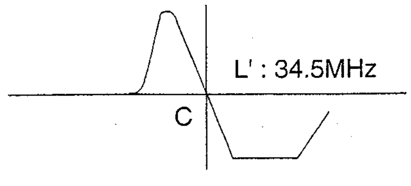
1) Connect the test point of LSW-480 to TP2.
2) Adjust L201(AFT COIL) so that the P marker point is located on the reference level.


B/G, L : 38.9MHz
I : 39.5MHz
P

AFT WAVEFORM

3. ADJUSTMENT OF SECAM-L' AFT

1) Connect the TP5 (Q205 collector) to GND.
2) Adjust C200(L'AFT TRIMMER) so that the C marker point (34.5MHz) is located on the reference level.



L'AFT WAVEFORM

■ PIF ADJUSTMENT(SUB)

1. APPARATUS CONNECTION AND PRESETTING

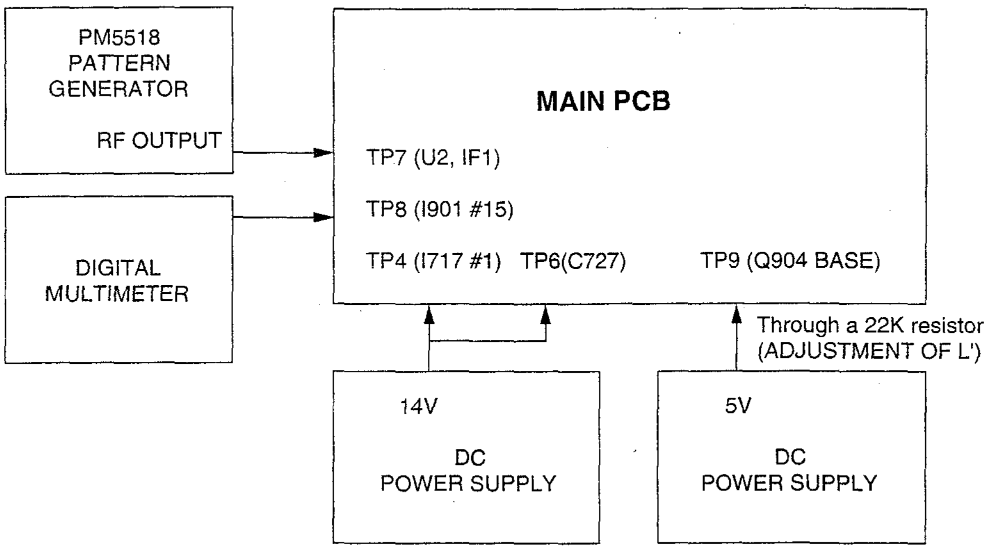
- CONNECTION

1) Connect RF-out of PM5518 to TP7.
2) Connect DC voltage meter to TP8.
3) Supply 14V DC voltage(B+) to TP4 and TP6.

- PRESET

1) PM5518 SETTING

	Freq. (MHz)	Remark
B/G,L	38.9	FA/LA
I	39.5	PA
L'	34.5	LA


PM5518
PATTERN
GENERATOR
RF OUTPUT
DIGITAL
MULTIMETER
MAIN PCB
TP7 (U2, IF1)
TP8 (I901 #15)
TP4 (I717 #1)
TP6(C727)
TP9 (Q904 BASE)
Through a 22K resistor
(ADJUSTMENT OF L')
14V
DC
POWER SUPPLY
5V
DC
POWER SUPPLY

Connection For PIF Adjustment

2. ADJUSTMENT OF AFT(B/G, I, L)

1) Connect the DC voltage meter to TP8.
2) Adjust L902(AFT COIL) for 2.2±0.1V.

3. ADJUSTMENT OF SECAM-L' AFT

1) Supply 5V DC voltage to TP9.
2) Connect the DC voltage meter to TP8.
3) Adjust R091(L'AFT VR.) for 2.2±0.1V

■ IC OPERATION DESCRIPTION

M37206MC-xxxSP (Micro-controller)

(1) General Description

It is a one-chip micro-controller with an 8-bit CPU.

(2) Functional Block Diagram

OSD OSC	1	OSC1	Vcc	64	+ 5V
OSD OSC	2	OSD2	H. SYNC	63	H.SYNC INPUT
(PULL UP) PIF MUTE	3	P MUTE	V. SYNC	62	V.SYNC INPUT
AFT IN1	4	AFT1	R	61	R OUT
P.F IN(L)	5	P.F IN	G	60	GUT
AFT IN2	6	AFT2	B	59	B OUT
(PULL UP) VOLUMOUT	7	VOL. PWM		58	NC
(PULL UP)CONT. OUT	8	CONT. PWM	BLK	57	BLANKING OUT
(PULL UP)BRIGHT OUT	9	BRI. PWM	TV 1/2	56	TV 1/2 SEL OUT
(PULL UP)COLOUR OUT	10	COL. PWM	SYS1	55	STSTEM1 OUT
(PULL UP)PEAKING OUT	11	PEA. PWM	SYS2	54	SYSTEM2 OUT
(PULL UP)TINT OUT	12	TINT. PWM		53	
(PULL UP)L1' OUT	13	L1' OUT		52	
(PULL UP)L2' OUT	14	L2' OUT		51	
TEXT1 USE	15	OP.8	V MUTE	50	V MUTE OUT
TEXT2 LANG	16	OP.9	S MUTE	49	SPEAKER MUTE
TEXT3 LANG	17	OP.10	TV PWR	48	TV POWER ON/OFF
SYS OSD	18	OP.11	DISABLE	47	DISABLE
SECAML	19	OP.12	A/V1	46	A/V1 SEL OUT
SYNC1 "H"	20	SYNCI	A/V2'	45	A/V2' SEL OUT
(PULL UP) IIC CLK	21	SCL	A/V1'	44	A/V1' SEL OUT
(PULL UP) IIC DATA	22	SDA	SCIN	43	SCART IN (S/SW)
(IDENT) SYNC LOW IN	23	SYNC. L	A/V	42	A/V SEL OUT
(PULL UP) SERIAL IN	24	SD_IN	OP. 7	41	VPS/PDC
(PULL UP) SERIAL CLK	25	SD_CLK	OP. 6	40	CLK TEST
(PULL UP) SERIAL OUT	26	SD_OUT	OP. 5	39	POWER ON START
GND	27	GND	OP. 4	38	SHOWVIEW
GND	28	GND	OP. 3	37	AV2
RESET(L)	29	RESET	OP. 2	36	U BAND
8.0 MHz	30	XIN	OP. 1	35	TAPE SPEED
8.0 MHz	31	XOUT	XCOUT	34	32.768 KHz
GND	32	GND	XCIN	33	32.768 KHz

(3) Functional Block Diagram

Pin No.	Symbol	Name	Function Description
1	OSC IN	Oscillator for OSD	OSD (On Screen Display)
2	OSC OUT		
3	P MUTE	PIF MUTE	Not used
4	AFT1	ADC Input	• Comparison voltage input terminal connected to built-in comparator. • Input AFT signal from MAIN TUNER with level conversion (0 to Vdd) • The results of the comparison are used when the auto search and digital AFT works.
5	P.F INPUT	POWER FAIL Input	Power fail detect input.
6	AFT2	ADC Input	• Input AFT signal from SUB TUNER with level conversion (0 to Vdd)
7	VOL	Volume Control Output	• Output the pulse width modulated signal in 63 level in accordance with 6-bit latch data.
8	CON	Contrast Control Output	
9	BRI	Brightness Control Output	
10	COL	Colour Control Output	
11	PEA	Peaking Control Output	
12	TINT	Tint Control Output	
13	L1'	L1' Output(SECAM)	
14	L2'	L2' Output(SECAM)	
15	OP. 8	Text use Option	
16	OP. 9	TURKISH Option	Not used
17	OP.10	EAST Option	Not used
18	OP.11	System OSD Option	SECAM Only
19	OP.12	SECAM-L Option	
20	SYNC1	Sync Ident Input	• Input terminal of image synchronous signal necessary for auto search and AFT operation. • In the case of the determination of the level signal synchronization, the signal state ("H" or "L") which is input at this terminal is determined every 4ms. "H" ------------ Presence of synchronization "L" ------------ Absence of synchronization
21	SCL	Clock Pin for IIC(O)	• Pin SCL and SDA are respectively the data and clock wire or the multi-master two-wire bidirection IIC-bus control bus. • If a transmission does not succeed the controller will retry it for up to 5 times. If the bus is occupied for longer than 1.18 seconds the u-controller will generate bursts of nine clock pulses with intervals of 1.18 seconds until bus is free again.
22	SDA	Data Pin for IIC(I/O)	
23	SYNC L	Sync Low	Sync low input (Ident) from SUB TUNER
24	SD IN		Syscon serial DATA input
25	S CLK		Syscon serial CLOCK out
26	SD OUT		Syscon serial DATA out
27	GND		GND

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Name</th><th>Function Description</th></tr>
<tr><td>28</td><td>GND.</td><td></td><td>GND</td></tr>
<tr><td>29</td><td>RESET</td><td>Reset Input</td><td>• This pin is used to reset the u-controller after a power-on reset. In order to be sure that the u-controller starts from an initialized state after the supply voltage is available, a reset signal has to be applied.
• This reset signal has to be low until a stable 4.19V supply voltage is available.</td></tr>
<tr><td>30</td><td>OSCI</td><td>Clock Input for CPU</td><td rowspan="2">• The OSCI and OSCO are used to control the on-chip oscillator of the u-controller.
• OSCI is the input terminal and OSCO the output terminal.
• All internal timing of the u-controller (except for the OSD part) are derived from this oscillator.
• The oscillator frequency has to be 8MHz.</td></tr>
<tr><td>31</td><td>OSCO</td><td>Clock Output for CPU</td></tr>
<tr><td>32</td><td>GND</td><td></td><td>GND</td></tr>
<tr><td>33</td><td>XCIN</td><td>XC IN</td><td>32.768KHz input</td></tr>
<tr><td>34</td><td>XCOUT</td><td>XC OUT</td><td>32.768KHz output</td></tr>
<tr><td>35</td><td>OP. 1</td><td>Tape Speed Option</td><td>SP/LP option</td></tr>
<tr><td>36</td><td>OP. 2</td><td>UHF only Option</td><td></td></tr>
<tr><td>37</td><td>OP. 3</td><td>AV2 Option</td><td></td></tr>
<tr><td>38</td><td>OP. 4</td><td>ShowView Option</td><td></td></tr>
<tr><td>39</td><td>OP. 5</td><td>Factory Power Option</td><td>Power-On start</td></tr>
<tr><td>40</td><td>OP. 6</td><td>Clock Test Option</td><td></td></tr>
<tr><td>41</td><td>OP. 7</td><td>VPS Option</td><td></td></tr>
<tr><td>42</td><td>A/V</td><td>A/V Mode Switching</td><td>Active "L"</td></tr>
<tr><td>43</td><td>S/SW</td><td>Scart Input</td><td>Slow switch input</td></tr>
<tr><td>44</td><td>AV1'</td><td>AV1' Switching Out</td><td rowspan="2">TV2, AV1', AV2' (VCR REC. mode)
<table>
<tr><th>AV1'</th><th>AV2'</th><th>Function</th></tr>
<tr><td>L</td><td>H</td><td>AV1</td></tr>
<tr><td>H</td><td>L</td><td>AV2</td></tr>
<tr><td>H</td><td>H</td><td>TV2</td></tr>
</table></td></tr>
<tr><td>45</td><td>AV2'</td><td>AV2' Switching Out</td></tr>
<tr><td>46</td><td>AV1</td><td>AV1 Switching Out</td><td>Active "L"</td></tr>
<tr><td>47</td><td>DISABLE</td><td>Disable Out</td><td>Switching Regulator ON/OFF output</td></tr>
<tr><td>48</td><td>POWER</td><td>Stand by ON/OFF Control Output</td><td>• The switch-mode power supply is controlled.
"L" ---------- power OFF
"H" --------- power ON</td></tr>
<tr><td>49</td><td>S. MUTE</td><td>Sound Mute Control</td><td>• Mute Output is active "H"
• On power on/off state, instantaneously cut off the sound and video.</td></tr>
<tr><td>50</td><td>V. MUTE</td><td>Video Mute Control</td><td>Not Connected</td></tr>
<tr><td>51</td><td>n.c.</td><td></td><td>Not Connected</td></tr>
<tr><td>52</td><td>n.c.</td><td></td><td>Not Connected</td></tr>
<tr><td>53</td><td>n.c.</td><td></td><td>Not Connected</td></tr>
<tr><td>54</td><td>SYS2</td><td>SECAM-L/L' Switch</td><td>SECAM-L/L' switch(TV2)</td></tr>
<tr><td>55</td><td>SYS1</td><td>SECAM-L/L' Switch</td><td>SECAM-L/L' switch(TV1)</td></tr>
</table>

Pin No.	Symbol	Name	Function Description
56	TV1/2		• TV1 / TV2 selection switch "H" -------------- TV1 "L" --------------- TV2
57	BLK	Blanking Signal for OSD	
58	n.c.		Not Connected
59	B	OSD Blue Colour Output	• Output R,G and B deliver the colour components for the OSD while output BLK is used as a test blanking signal. • The output polarity of the R,G,B and BLK terminals are active "H".
60	G	OSD Green Colour Output	
61	R	OSD Red Colour Output	
62	V-sync	V-sync input for OSD	• Input terminal for CRT display vertical synchronous signal. • Input rectangular pulses whose amplitude is in the range from 0 to 5V. • The signal state should be active for the time more than that required for three scanning lines. The input polarity is active "L".
63	H-sync	H-sync input for OSD	• Input terminal for CRT display horizontal synchronous signal. • Input rectangular pulses whose amplitude is in the range from 0 to 5V. • The input polarity is active "L". • The signal state should be active for the time more than that required for three scanning lines.
64	Vcc	Power supply input terminal	• Connected to the 5V power supply.

TDA 8362

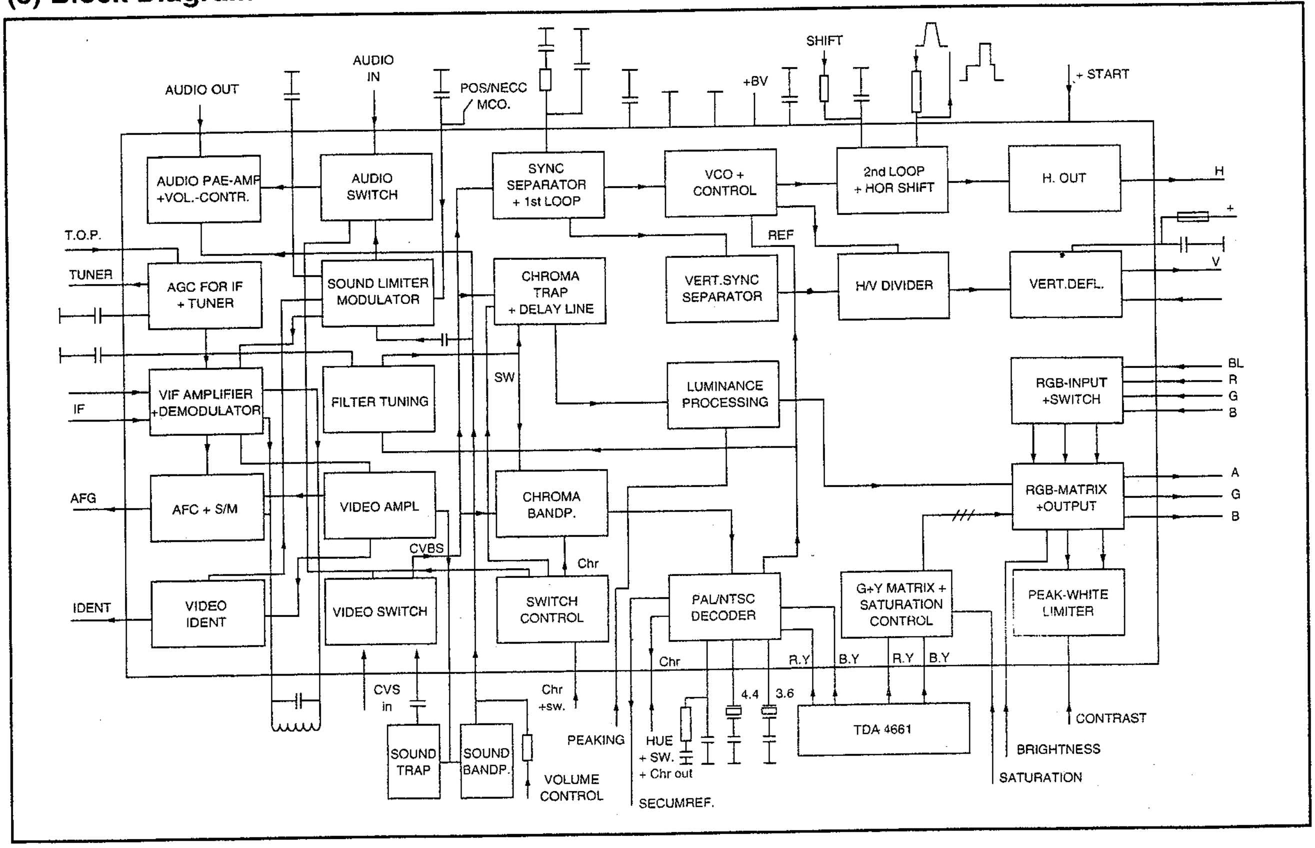
(1) Features

- Multi-standard vision IF circuit (positive and negative modulation)
- Multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Video and audio switches (CVBS int/ext, S-VHS and audio int/ext)
- Integrated chroma trap and bandpass filters (autocalibrated)
- Luminance delay line integrated
- PAL/NTSC colour decoder with automatic search system
- Easy interfacing with the TDA 8395 (SECAM decoder)for multi-standard applications
- RGB-control circuit with linear RGB inputs and fast blanking
- Horizontal synchronization with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit and vertical pre-amplifier
- Low dissipation(only 600mW)
- Small amount of peripheral components compared with competition IC's
- Only one adjustment (vision IF demodulator)

(2) Description

- Vision IF amplifier, video demodulator, video amplifier, AGC and AFC suitable for both negative and positive modulation.
- Sound limiter,demodulator and amplifier with volume control.
- Inputs and switches for external audio and CVBS signals.
- Synchronization circuit with drive circuits for horizontal and vertical deflection.
  X-ray protection (combined with the 2nd phase detector pin).
- PAL/NTSC color decoder in which the chroma filters (bandpass and trap) and the luminance delay line have been integrated. The circuit has a separate chroma input and the filters can be switched-off so that S-VHS signals (via an external switch) can be applied to the IC.
  For SECAM applications an (alignment-free) SECAM-decoder can be added to the IC.
  Peaking circuit in the luminance channel.
  RGB-output circuit with linear inputs for On-screen Character Display.

(3) Block Diagram


AUDIO OUT
AUDIO IN
POS/NECC MCO.
SHIFT
+BV
+ START
AUDIO PAE-AMP +VOL.-CONTR.
AUDIO SWITCH
SYNC SEPARATOR + 1st LOOP
VCO + CONTROL
2nd LOOP + HOR SHIFT
H. OUT
H
+
V
REF
T.O.P.
TUNER
AGC FOR IF + TUNER
SOUND LIMITER MODULATOR
CHROMA TRAP + DELAY LINE
VERT.SYNC SEPARATOR
H/V DIVIDER
VERT.DEFL.
SW
IF
VIF AMPLIFIER +DEMODULATOR
FILTER TUNING
LUMINANCE PROCESSING
RGB-INPUT +SWITCH
BL
R
G
B
AFG
AFC + S/M
VIDEO AMPL
CHROMA BANDP.
RGB-MATRIX +OUTPUT
A
G
B
CVBS
Chr
IDENT
VIDEO IDENT
VIDEO SWITCH
SWITCH CONTROL
PAL/NTSC DECODER
G+Y MATRIX + SATURATION CONTROL
PEAK-WHITE LIMITER
Chr
R.Y
B.Y
R.Y
B.Y
CVS in
Chr +sw.
4.4
3.6
TDA 4661
CONTRAST
PEAKING
HUE + SW. + Chr out
SOUND TRAP
SOUND BANDP.
VOLUME CONTROL
SECUMREF.
BRIGHTNESS
SATURATION

<table>
<tr><th>Pin No.</th><th>Name</th><th>Function Description</th></tr>
<tr><td>1</td><td>Audio De-emphasis</td><td>At this pin the audio signal is available for scart. The signal has an amplitude of 350mVrms (at δf= 50KHz) is non volume controlled and has to be buffered.(notice the output impedance influences the deemphasis).For scart requirements, the buffer should be dimensioned as an amplifier in order to increase the output signal. A third function of this pin is the positive modulation switch. When the voltage at this pin is above Vcc-1V positive modulation is selected. The current needed is 100µA typical.</td></tr>
<tr><td>2,3</td><td>IF
Demodulator
Tuned Circuit</td><td>Because the demodulator performance depends on the Q factor, we want to keep the Q factor as high as possible. But this means that the steepness of the AFC will change with the Q factor of the tuned clicuit itself and also with the input impedance of the IC A compromise has to be made. The input impedance of the IC is as large as possible (about 12 kOhms) and the Q factor of normal tuned circuits varies from 70 to 90. By means of an external resistor, it is possible to damp the circuit to a Q of 40 to reduce the steepness variation of the AFC.</td></tr>
<tr><td>4</td><td>Video
Identification
Output</td><td>The identification output has a three level output, 0.5, 6 or 8V.
<table>
<tr><td>Output voltage "video not identified"</td><td>0.5V max</td></tr>
<tr><td>Output voltage "video identified"
and colour signal available with fsc = 3.5MHz</td><td>6V</td></tr>
<tr><td>Output voltage "video identified"
and colour signal available with fsc = 4.4MHz or
no colour signal detected</td><td>8V</td></tr>
</table>
The maximum load current on this pin is 25µA.
The output impedance is 20 KΩ.</td></tr>
<tr><td>5</td><td>SIF input
+Volume control</td><td>The sound input impedance is 8.5KΩ/5pF which has to be taken into account for the ceramic filiters. For DC, the impedance is very high. The PLL is sensitive for high freq. AC signal > 1mVrms. Because of the chosen principle: an adjustment free PLL it is needed to have an internal PLL with a large bandwidth (catching range). This implies the system also is sensitive for spurious frequencies. Both layout and sound band pass filters need special attention. The volume can be controlled at this pin by means of a DC voltage of 0.2-5V for min-max gain.</td></tr>
<tr><td>6</td><td>External Audio Input</td><td>External sound signals from scart, for example, can be applied to this pin via a capacitor. The input impedance is 25 KΩ.</td></tr>
<tr><td>7</td><td>IF Video Output</td><td>A multistandard concept requires several filters at the video output (sound-trap and sound-band pass filters). This causes a too big capacitive load at the video output so an EMITTER FOLLOWER as buffer should be added. The required emitter current depends on the number of filter applied.</td></tr>
<tr><td>8</td><td>Decoupling
digital Supply</td><td>Decoupling Digital Supply</td></tr>
<tr><td>9</td><td>Ground</td><td>Ground 1 (IF, H sync, RGB output, Digital, H output)</td></tr>
<tr><td>10</td><td>Positive Supply (8V)</td><td>Supply (IF,Sound,H sync,Chroma, Filters,RGB output, Digital,)</td></tr>
<tr><td>11</td><td>Ground</td><td>Ground 2 (Sound,Chroma,Filters,Hosc, PHI-1, PHI-2)</td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Name</th><th>Function Description</th></tr>
<tr><td>12</td><td>Decoupling filter tuning</td><td>Variations in the tuning voltage outside calibration (i.e. during field scan), due to external leakage current or interference sources, will result in mistuning of the luminance notch filter, chroma bandpass filter and luminance delay stage. Unwanted voltage signals at pin 12 due to external leakage currents or cros-stalk from interference sources should be less than 100mV. A capacitor of 100nF requires that external leakage at pin 12 should be less than 0.5μA.</td></tr>
<tr><td>13
15</td><td>Internal CVS input
External CVS input</td><td>The internal and external CVBS amplitudes should be 2Vpk-pk and 1Vpk-pk respectively; their source impedances should be low so as to minimze cross-talk from interference sources. The internal CVBS input is derived from the IF video output (pin 7) and the external CVBS input can be derived from either SCART CVBS or YSVHS; they should be AC coupled to pins 13 & 15 respectively. The coupling capacitors are chosen in order to have fast clamping and minimum line/field sag.</td></tr>
<tr><td>14</td><td>Peaking control input</td><td>The input impedance of pin 14 is very high (MOS input). The DC voltage at the peaking control input controls the gain of the peaking amplifier. The peaking control input voltage should have a DC voltage range from 0 to 5V.</td></tr>
<tr><td>16</td><td>AV switch input
+ Chroma (SVHS) input</td><td>The input impedance of the chroma and A/V switch input(pin 16) is 15K Ω in parallel with 5pF. A DC voltage on this pin controls the internal/ external CVBS and AUDIO selection where the following table gives the various possibilities:
<table>
<tr><th>Vpin 16 (dc)</th><th>Internal CVBS</th><th>External CVBS/Y</th><th>CSVHS signal</th><th>Luminance notch</th><th>Audio signal</th><th>Model</th></tr>
<tr><td><0.5V</td><td>on</td><td>off</td><td>off</td><td>on</td><td>Internal</td><td>TV</td></tr>
<tr><td>Between 3V &5V</td><td>off</td><td>on(Y)</td><td>on</td><td>off</td><td>External</td><td>S VHS</td></tr>
<tr><td>>7.5V</td><td>off</td><td>on (CVBS)</td><td>off</td><td>on</td><td>External</td><td>AV</td></tr>
</table></td></tr>
<tr><td>17</td><td>Brightness Control input</td><td>The brightness control voltage present at pin 17 controls the dc level of the RGB outputs where a brightness control voltage of 0→ 5V at pin 17 results in a black level shift at the RGB outputs of± 1V about the nominal.</td></tr>
<tr><td>18
19
20</td><td>B-output
G-output
R-output</td><td>The RGB output signals are supplied to the video output stages. For nominal input signals (i.e. CVBS and -(R-Y)/-(B-/Y) signals) and for nominal gain settings then the RGB output signal amplitudes (black-to-white)are typically 4V with a black level at approximately 1.3V. The blanking level is 0.8V and maximum peak white level is 6.0V Since the RGB output stages are made with emitter followers, the maximum sink current is limited to 1.5mA. Therefore the current delivered from the video output stages to the RGB pins must not exceed 1.5mA.When the RGB switch control (pin 21) voltage exceeds 4V then the RGB outputs are blanked and consequently on-screen display signals (OSD) can be supplied to the video output stages.</td></tr>
<tr><td>21</td><td>RGB insertion
+ Blanking input</td><td>The RGB insertion signals are selected by means of a fast switch control.With the conditions that:0.8V<Vpin21<3.1V then the RGB insertion signals are selected. And input voltage to blank the RGB- outputs so that OSD signals can be applied to these outputs is 4.5V (min).</td></tr>
<tr><td>22
23
24</td><td>R-input for insertion
G-input for insertion
B-input for insertion</td><td>The RGB insertion signal information is coupled via 100nF to pins 22, 23 and 24 respectively. The coupling/clamping capacitors should always have a low impedance path to ground for proper clamping operation.</td></tr>
</table>

Pin No.	Name	Function Description
25	Contrast Control input	The contrast control input of 0→ 5V at pin 25 gives a 20dB gain range at the RGB outputs. When one of the RGB output signals exceed 6V, it is then clipped to 6V and also the gain of the RGB output amplifiers can be reduced by adapting the contrast voltage using the peak white limiter (PWL) current, The PWL current during PWL operation is 100μA.
26	Saturation Control Input	The saturation control input voltage, present at pin 26, is 0→5V. this corresponds to a 52dB gain range of the -(R-Y)/-(B-Y) signals.
27	Chroma output + Hue Control Input	If the Vpin27>6V, the ASM does not search for NTSC signals and the decoder application can only be PAL or PAL/SECAM. The output impedance with an external resistance of 22KΩ to 8V is then approximately 500Ω.The hue control input pin should be provided with a voltage of 0 to 5V for NTSC decoder applications; within this voltage range the input impedance is very high (MOS input).
28 29	B-Y input R-Y input	The -(R-Y)/-(B-Y) signals, present at pins 11 and 12 of the TDA4661, are coupled via 100nF (these capacitors are also clamping capacitors) to pins 29 and 28. The maximum input current of both pins is 1μA. With 100nF coupling capacitors the voltage drop over a line period is less than 0.5mV Since the output impedance of pin 11 and 12 of the TDA 4661 is maximal 400 Ω then the signal tracks between the TDA 4661 and the TDA8362 should have good ground shielding and be as short as possible.
30 31	R-Y output B-Y output	The output impedance of pins 30 & 31 is approximately 250Ω when PAL/NTSC signals are identified. For SECAM signals the output impedance is very high (output switch is open) and any external circuity is not loaded (i.e. the demodulator output of the TDA 8395). During the line/field blanking periods of the sandcastle pulse, the demodulator outputs are set to the correct dc levels so as no offsets exist. The-(R-Y)/-(B-Y) outputs are coupled, via 1nF, to pins 16 & 14 of the TDA4661 respectively.
32	4.43 MHz output for TDA8395	A SECAM reference signal (4.43 MHz only) is delivered directly from pin 32 of the TDA8362 to pin 1 of the TDA8395. When SECAM siganals are identified by the TDA8395, it withdraws a current of 150μA from pin 32.The SECAM interface communicates the ident information via this current to the ASM. If PAL/NTSC signals are not already identified by the ASM and the identified signal is 50 Hz then an acknowledge will be given by ASM to the TDA8395 by setting the voltage at pin 32 to 5V. With SECAM identified, the SECAM reference signal signal is gated and present at pin 32 only during the field retrace period. When PAL/NTSC is identified, the output level is 1.5V.
33	Loop Fitter (Burst Phase Detector)	One of the important aspects of the PLL is the loop filter connected to pin 33. It ensures that the PLL synchronizes the VCXO, in both frequency and phase, with the incoming burst (average burst for PAL standards). It also determines the dynamic performance of the loop where the important parameters are: -Noise immunity - Transient response -Acquisition behaviour The remaining aspects of the PLL/VCXO are static phase error and X-tal type used at pins 34 or 35. For small static phase errors (less than 5°)the requirements are: -The combined buest phase detector and VCXO sensitivity are high. The offset of the burst phase detector output is small. -The external leakage current at pin 33 is small. The TDA8362 determines the first two; the third is determined by the external leakage resistance of pin 33 to ground. Deviations in the VCXO free running frequency due to X-tal or X-tal load capacitance spreads have negligible influence on the static phase error because the combined phase detector and VCXO sensitivity is high. The static phase error is due to the internal offset of the phase detector output and the external leakge current at pin 33. Static phase errors much less than 5° were measured.

Pin No.	Name	Function Description
34	3.58MHz X-TAL Connection	To ensure correct operation of both colour processing and sync calibrationcircuits in the TDA8362, 4.43 X-tals must not be connected to pin 34 and 3.58 X-tals must not be connected to pin 35.
35	4.43MHz X-TAL Connection	
36	Start Horizontal Oscilator	The minimum current required for the start function is 6.5mA, then the voltage will be approx. >7.2V. The voltage at pin 36 may not exceed 8.8V, so depending on the application external clamping is necessary. If the start voltage is below approximately 5.8V then the horizontal output will be disabled. The decoupling should be sufficent because the start pin supplies the circuitries needed for the horizontal output. (The oscillator references, however, are supplied by the bandgap.) This pin must be connected directly to the supply pin when no start function is used.
37	Horizontal Output	This open collector output drives the horizontal output stage. The maximum allowable current is 10mA. The saturation voltage then will be 0.3V.
38	Flyback input +Sandcastle Output	A sandcastle signal is available at this pin for external use. The signal levels are: Burst typ 5.3V, the output impedance is approx. 1kΩ Flyback typ 3 V, impedance defined by the flyback circuit. Field blanking typ 2 V, the output impedance is approx. 4kΩ The flyback input signal is used for the PHI-2 loop and RGB line blanking. Pin 38 requires a current of only a few μA in order to reach the 3V flyback clamping level. Detection of the flyback pulse (and thus RGB blanking) only occurs when the input current is at least 100μA. (The maximum allowable current is 300μA.) Additonal remarks: -Due to an internal base current at pin 38, the voltage level becomes 3V when the pin is not loaded. -During start-up pin 38 is forced low by 2mA.
39	Φ-2 loop Filter +X-Ray Protection	The phase error on screen due to storage time variations depends on the PHI-2 loopgain. In principle this figure is fixed but will decrease when an additional resistor comes in parallel to the capacitor at pin 39. The time constant is defined by the external capacitor. The voltage to switch on the X-ray protection is 6V. (min.)
40	Φ-1 loop Filter	The PHI-1 behaviour depends on both the loop filter externally connected at pin 40 and the PHI-1 output currents. The PHI-1 output current has been made switchable during scan (a fixed current ratio) in order to avoid the need of switching the loop filter for normal-and noisy-signals. This implies the loop filter can be optimised for both VCR-and noisy-signals.
41	Vertical Feedback Input	The feedback signal is derived by sensing the deflection coil current by means of a resistor. The feedback signal is related to the vertical ramp signal. The ramp amplitude should be 1Vpp while the DC level is 2.5V typical. The guard levels are 1 and 4Vtyp. In order to filter horizonatal into a capacitor is mounted at the input.
42	Vertical Ramp Generator	The vertical ramp is defined as: -DC clamping voltage of 2V -AC amplitude of 1.5Vpp for a 50Hz field signal -AC amplitude of 1.25Vpp for a 60Hz field signal The AC amplitude of 1.5V is important for optimal pre-correction and 50/60Hz gain correction.

Pin No.	Name	Function Description
43	Vertical Output.	The vertical drive output is fed to the deflection-IC. The available output current is minimal 1mA, and the available output voltage is 4-5V. During retrace the drive output has to be constant and equal to the low level of 0.3V.
44	AFC Output	The AFC steepness can be influenced by the Q of the tuned circuit and output resistors at the AFC output pin (60kΩ output impedance intermally). Due to current reserve the steepness can be reduced by a factor 4-5 while the output voltage swing remains 6V. Some small video information can still be present at the AFC output pin although a S&H function is applied. This video information can be filtered by an external capacitor at this pin. The AFC output voltage changes from approximately 0.5-6.3V. The output impedance of AFC circuit is 50kΩ.
45,46	IF Input	DC coupling is allowed, so no series capacitors are necessary. The circuit matches the required load impedance for commonly used SAW filters(2k/3pF).
47	Tuner AGC Output	The tuner AGC is an open collector output which is acting as a variable current source to ground. Normally the output application circuit is designed for an output current swing of 1-2mA. In order to improve the dynamical behaviour during channel switching it is possible to sink with a current of approximately 12mA maximal. The max voltage is Vcc+1V.
48	AGC Decoupling Capacitor	Increasing of the AGC time constant is achieved by increasing the AGC capacitor on pin 48. Increasing this capacitor also results in an improvement in the catching and holding range of the ident circuit.
49	Tuner Take-Over Adjustment	The control range at this pin is 0.5-4.5V. Characteristics: The tuner take over adjust voltage versus IF input signal is a linear function with a slope of approximately 20mV/dB. (Measured at an AGC output current of 1mA) In order to achieve a stable AGC control at strong signals a decoupling capacitor of at least 1nF at this pin is required. Alignment: With the potentiometer connected to pin 49 of the TDA8362, the tuner take over point can be adjusted when an RF signal is applied to the aerial input of the tuner.
50	Audio Input	The DC output voltage is 3.3V. The volume controlled output signal is AC coupled to the sound output amplifier. The output impedance is 250Ω.
51	Decoupling Sound Demodulator	This pin defines the DC voltage at the deemphasis and sound output. The pin forms a low pass filter in the DC feedback loop. This implies that the sound amplitude for lower frequencies, < fk, is attenuated. A bigger capacitor, in order to decrease fk, is allowed but increases the DC setting time.
52	Decoupling Bandgap Supply	Decoupling Bandgap Supply

TDA4661(Base Band Delay Line)

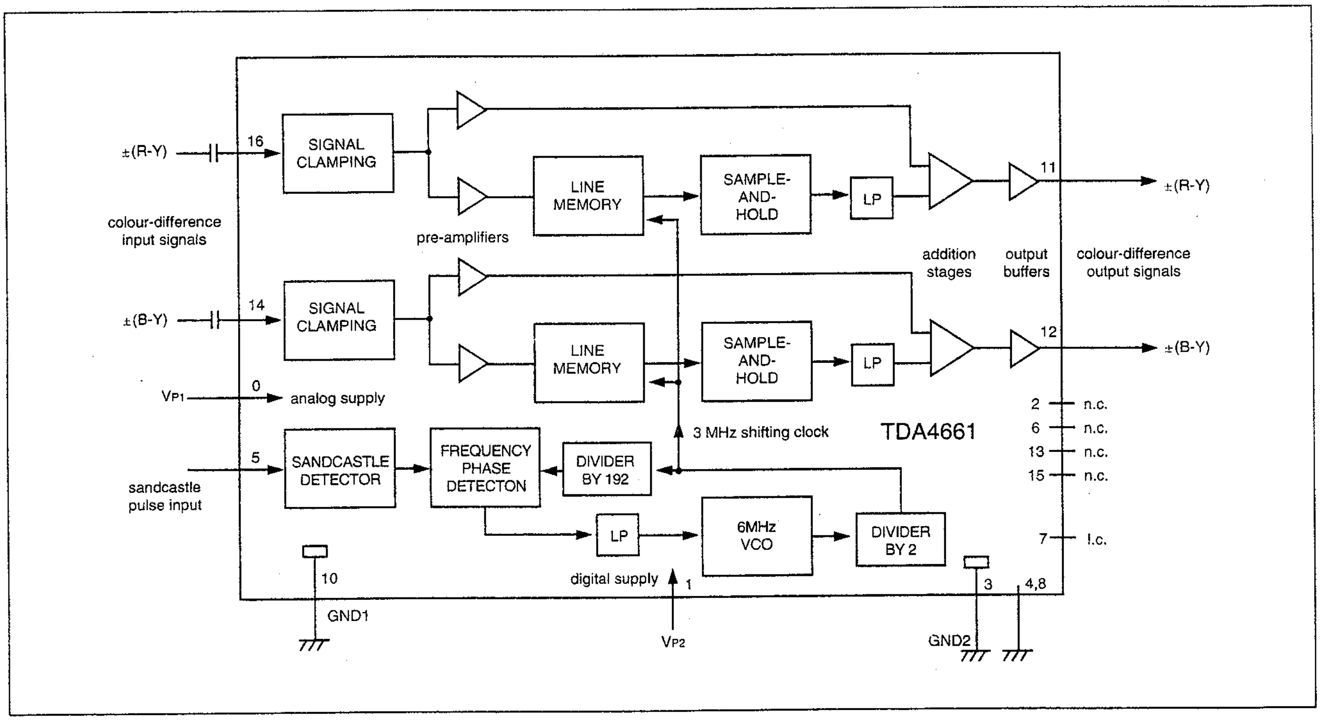
(1) Features

- Two comb filters, using the switched-capacitor technique,for one line delay time (64μs)
- Adjustment free application
- No crosstalk between SECAM colour carriers
- Handles negative or positive colour-difference input signals
- Clamping of AC-coupled input signals(±(R-Y)and±(B-Y))
- VCO without external components
- 3MHz internal clock signal derived from a 6MHz VCO, line-locked by the sandcastle pulse (64μs line)
- Sample-and -hold circuits and low-pass filters to suppress the 3 MHz clock signal
- Addition of delayed and non-delayed output signals
- Output buffer amplifiers
- Comb filtering functions for NTSC colour-difference signals to suppress cross-colour

(2) General Description

The TDA4661 is an integrated baseband delay line circuit with one line delay. It is suitable for decoders with colour-difference signal outputs±(R-Y)and±(B-Y).

(3)Block Diagram


±(R-Y)
16
SIGNAL CLAMPING
colour-difference input signals
pre-amplifiers
LINE MEMORY
SAMPLE-AND-HOLD
LP
11
±(R-Y)
addition stages
output buffers
colour-difference output signals
±(B-Y)
14
SIGNAL CLAMPING
LINE MEMORY
SAMPLE-AND-HOLD
LP
12
±(B-Y)
VP1
0
analog supply
2 n.c.
6 n.c.
13 n.c.
15 n.c.
3 MHz shifting clock
TDA4661
5
SANDCASTLE DETECTOR
sandcastle pulse input
FREQUENCY PHASE DETECTON
DIVIDER BY 192
LP
6MHz VCO
DIVIDER BY 2
7 I.c.
10
GND1
digital supply
1
VP2
GND2
3
4,8

(4)Pin Description

SYMBOL	PIN	DESCRIPTION
V_{P2}	1	+5V supply voltage for digital part
n.c.	2	not connected
GND2	3	ground for digital part (0V)
i.c.	4	internally connected
SAND	5	sandcastle pulse input
n.c.	6	not connected
i.c.	7	internally connected
i.c.	8	internally connected

SYMBOL	PIN	DESCRIPTION
V_{P1}	9	+5V supply voltage for analog part
GND1	10	ground for analog part (0V)
V_O(R-Y)	11	± (R-Y) output signal
V_O(B-Y)	12	± (B-Y) output signal
n.c.	13	not connected
V_I(B-Y)	14	± (B-Y) input signal
n.c.	15	not connected
V_I(R-Y)	16	± (R-Y) input signal

TDA8395 (Secam Decoder)

(1) Features

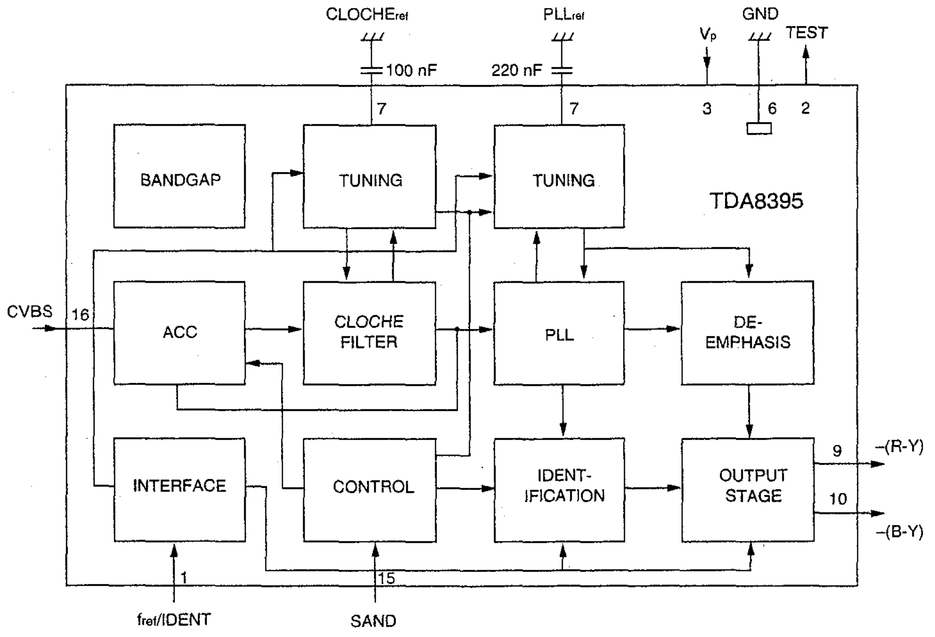
- Fully integrated filters
- Alignment free
- For use with baseband delay

(2) Description

The TDA8395 is a self-calibrating,fully integrated SECAM decoder. The IC should preferably be used in conjunction with the PAL/NTSC decoder TDA8362 and with the switch capacitor baseband delay circuit TDA4661. The IC incorporates HF and LF filters, a demodulator and an identification circuit (luminance is not processed in this IC).

A highly stable reference frequency is required for calibration and a two-level sandcastle pulse for blanking and burst gating.

(3) Block Diagram


CLOCHEref
PLLref
GND
Vp
TEST
100 nF
220 nF
7
7
3
6
2
BANDGAP
TUNING
TUNING
TDA8395
CVBS
16
ACC
CLOCHE FILTER
PLL
DE-EMPHASIS
INTERFACE
CONTROL
IDENT-IFICATION
OUTPUT STAGE
9
-(R-Y)
10
-(B-Y)
1
15
fref/IDENT
SAND

(4) Pin Description

SYMBOL	PIN	DESCRIPTION
fp1/IDENT	1	reference frequency input/identification input
TEST	2	test output
Vp	3	positive supply voltage
n.c.	4	not connected
n.c.	5	not connected
GND	6	ground
CLOCHEref	7	Cloche reference filter
PLL ref	8	PLL reference
-(R-Y)	9	-(R-Y) output
-(B-Y)	10	-(B-Y) output
n.c.	11	not connected
n.c.	12	not connected
n.c.	13	not connected
n.c.	14	not connected
SAND	15	sandcastle pulse input
CVBS	16	video (chrominance) input

AT24C08PC (EEPROM)

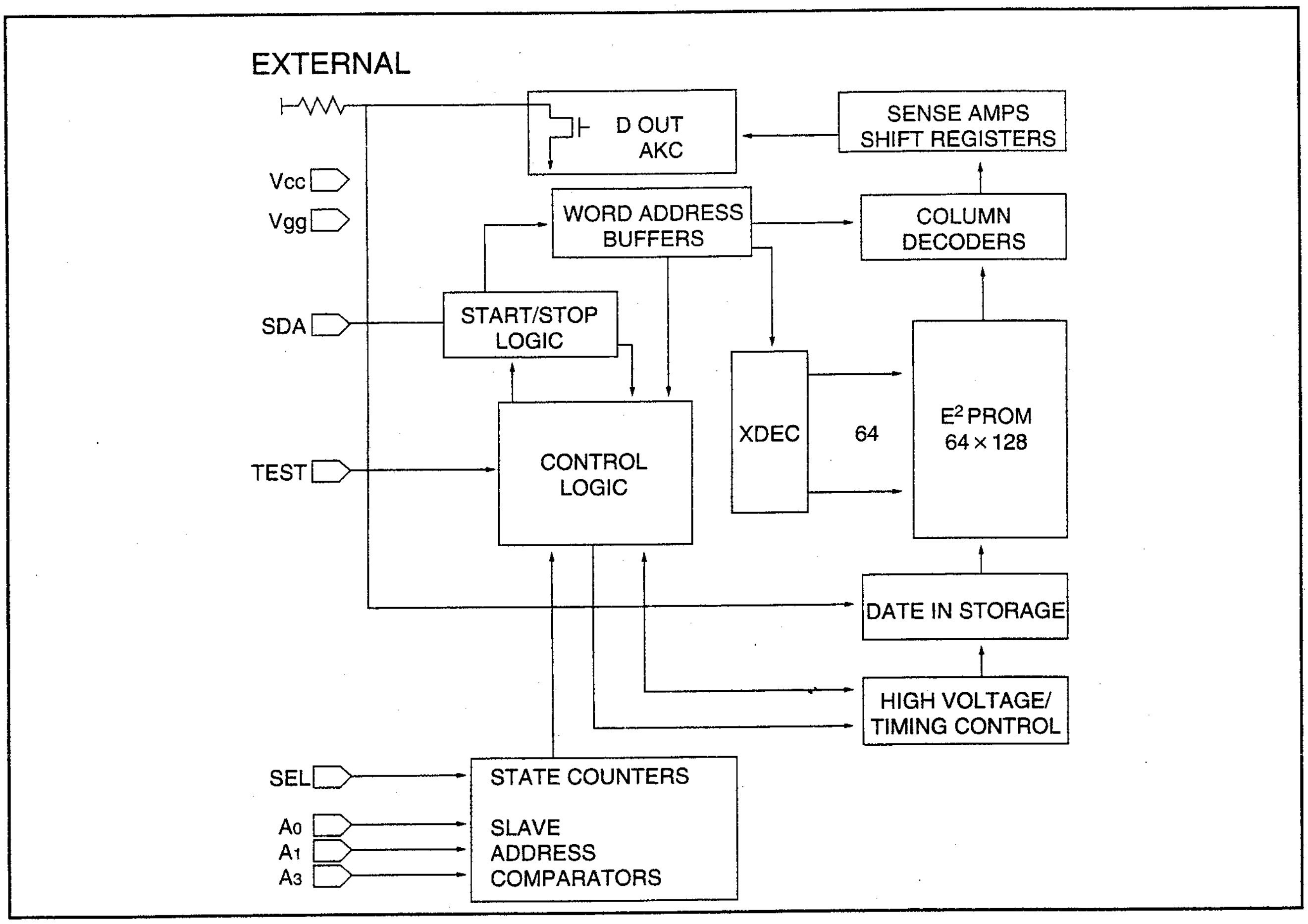
(1)Features

- IC Bus compatible
- Low power CMOS Technology
- 16 Byte page write Buffer
- Self-Timed write cycle with Auto-Clear
- 100,000 program/Erase cycles
- 100 Year Data Retention
- Optional High Endurance Device Available

(2)General Description

The AT24C08PC is a 8K bit serial CMOS E^2PROM internally organized as 1024x8bits. Catalyst's advanced CMOS technology substantially reduces device power requirements. The AT24C08PC features a 16 byte page write buffer.

(3) Block Diagram


EXTERNAL
Vcc
Vgg
SDA
TEST
SEL
A0
A1
A3
D OUT
AKC
SENSE AMPS
SHIFT REGISTERS
WORD ADDRESS
BUFFERS
COLUMN
DECODERS
START/STOP
LOGIC
CONTROL
LOGIC
XDEC
64
E² PROM
64 × 128
DATE IN STORAGE
HIGH VOLTAGE/
TIMING CONTROL
STATE COUNTERS
SLAVE
ADDRESS
COMPARATORS

(4) Pin Description

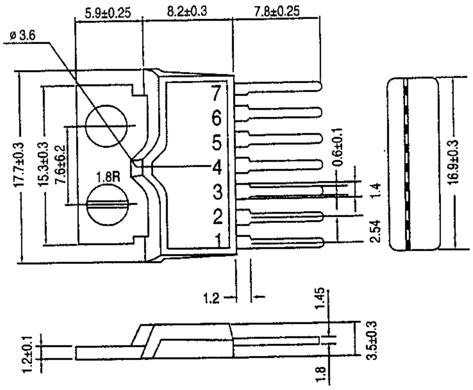
PIN	SYMBOL	DESCRIPTION
1-3	A0,A1,A2	Device Address Inputs
4	Vss	Ground
5	SDA	Serial Data/Address
6	SCL	Serial Clock
7	TEST	Connect to Vss
8	Vcc	+5V Power supply

AN5515 (TV Vertical Defelection Output Circuit)

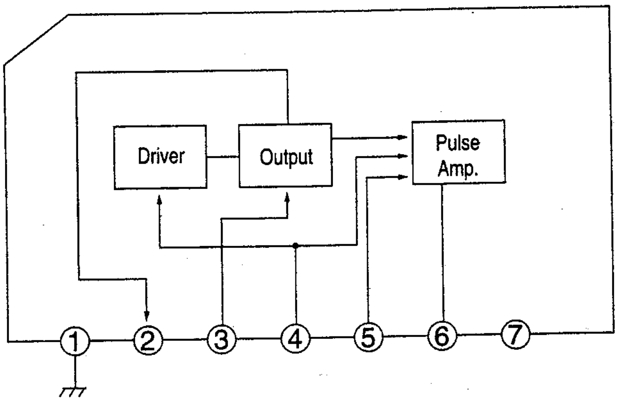
(1)Features

- Low power consumption, direct deflection coil driving capability (Flyback voltage two times as high as supply voltage is supplied during flyback period only)
- High breakdown voltage: 50V

(2)General Description


5.9±0.25
8.2±0.3
7.8±0.25
ø 3.6
17.7±0.3
15.3±0.3
7.6±6.2
1.8R
7
6
5
4
3
2
1
0.6±0.1
1.4
2.54
16.9±0.3
1.2
1.45
1.2±0.1
3.5±0.3
1.8

(3)Block Diagram


Driver
Output
Pulse Amp.
①
②
③
④
⑤
⑥
⑦

(4)Pin Description

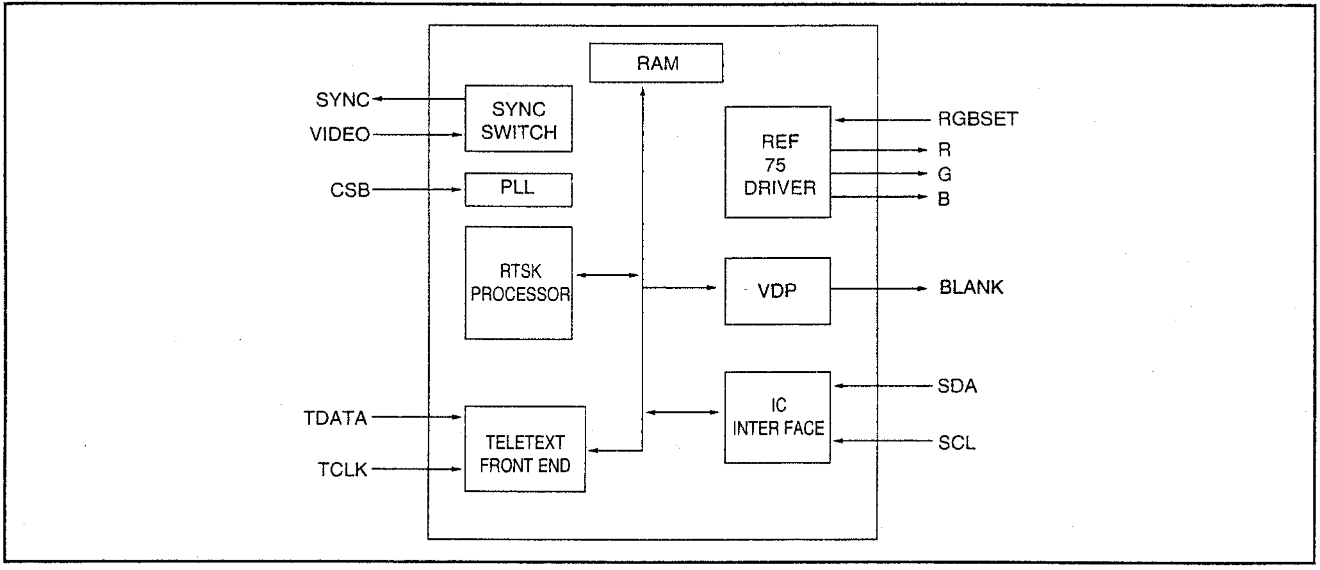
PIN	DESCRIPTION
1	GND
2	Output
3	Supply Voltage for Output
4	Input
5	Trigger Pulse Input
6	Pulse Amp. Output
7	Vcc

CF70200 (Teletext Decoder)

(1) Features

- Eight pages of on-chip Display RAM
- Europe-wide solution
- Automatic FLOF & TOP decoding
- Flicker-free packet 26 processing on chip
- Program delivery control
- Minimum software requirement
- Menu page capability
- Instantaneous page memory clear
- 75Ω RGB outputs
- Digital PLL
- Upgrade path from UNITEXT

(2) Block Diagram



RAM
SYNC
VIDEO
SYNC SWITCH
CSB
PLL
RTSK PROCESSOR
REF 75 DRIVER
RGBSET
R
G
B
VDP
BLANK
IC INTER FACE
SDA
SCL
TDATA
TCLK
TELETEXT FRONT END

PIN	PIN NAME	DESCRIPTION
1	TEST5	Test Pin
2	SYNC	The output of an internal sync switch
3	CVBS	Video input to sync switch
4	DVcc	+5V
5	RSTB	System reset active low
6	CLKIN	System clock 13.875MHz
7	DGND	Ground
8	T1	Test Pin
9	T4	Test Pin
10	TDATA	Teletext Data
11	TCLK	Teletext Clock Signal
12	CSB	Composite Sync Signal
13	MUTE	Mute
14	T2	Test Pin

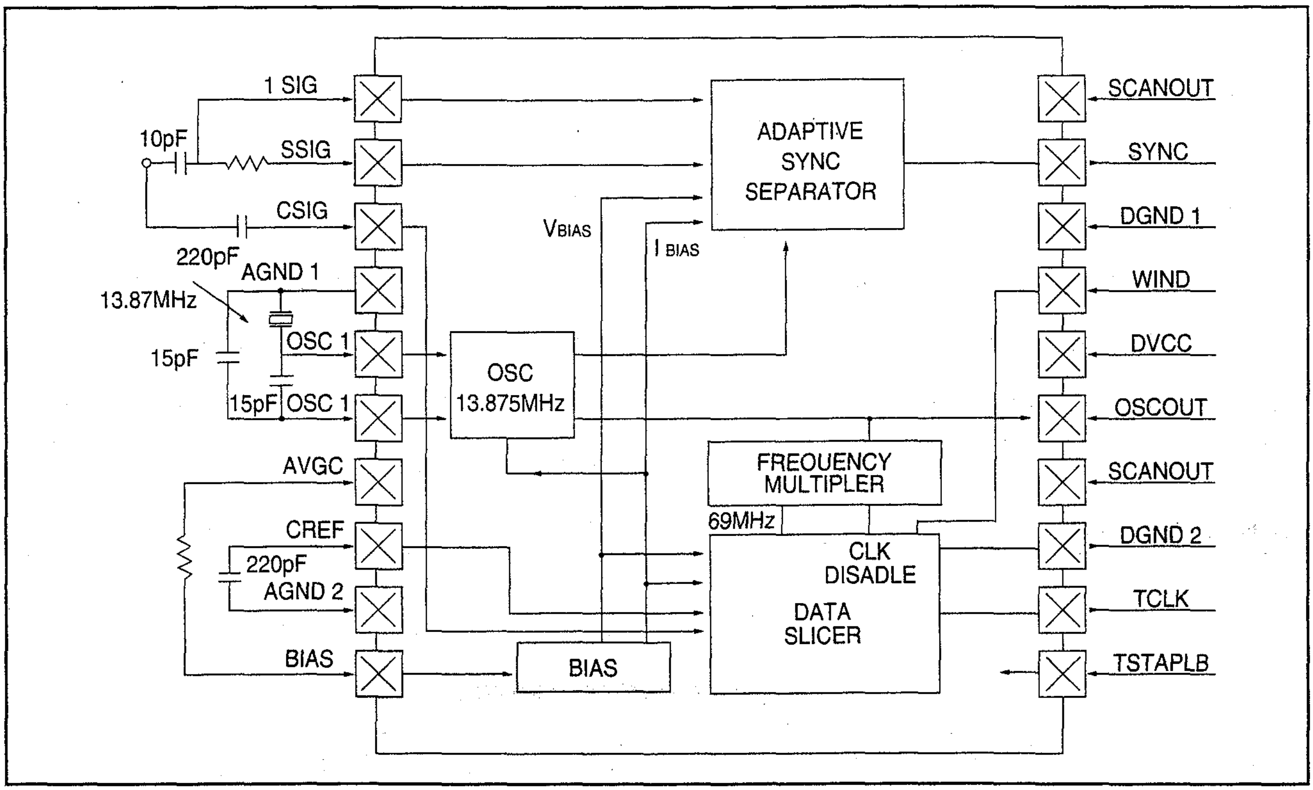
PIN	PIN NAME	DESCRIPTION
15	WIND	WIND
16	T3	Test Pin
17	SCL	I2C Clock Line
18	SDA	I2C Data Line
19	BLK	Blanking
20	B	Display Data
21	AVcc	+5V
22	G	Display Data
23	R	Display Data
24	AGND	Ground
25	RGBSET	Adjustment for theRGB,Blank levels
26	REF	Internal Reference Pin
27	FLAG1	System Information
28	FLAG2	System Information

CF72306

(1) Features

- Forms a custom 2-chip solution when used with an ASICTEXT decoder
- Low power 1um CMOS
- Standard 20 pin/300mH package
- Tolerates a range of video distortions
- Operates with 13.875MHz fundamental mode crystal

(2) Block Diagram


1 SIG
10pF
SSIG
CSIG
220pF
AGND 1
13.87MHz
15pF
OSC 1
15pF
OSC 1
AVGC
CREF
220pF
AGND 2
BIAS
VBIAS
I BIAS
ADAPTIVE SYNC SEPARATOR
OSC 13.875MHz
FREOUENCY MULTIPLER
69MHz
CLK DISADLE
DATA SLICER
BIAS
SCANOUT
SYNC
DGND 1
WIND
DVCC
OSCOUT
SCANOUT
DGND 2
TCLK
TSTAPLB

(3) Pin Description

PIN	SIGNAL	DESCRIPTION
1	TSIG	Video Sync Input 1
2	SSIG	Video Sync Input 2
3	CSIG	Video Data Input
4	AGND1	Analogue Ground
5	OSC1	13.875MHz Oscillator
6	OSC2	13.875MHz Oscillator
7	AVCC	Analogue Vcc
8	CREF	Video Data Reference Input
9	AGND2	Analogue Ground
10	BIAS	Internal Reference

PIN	SIGNAL	DESCRIPTION
11	TSTAPLB	Test/Application
12	TCLK	Teletext Clock
13	TDATA	Teletext Data
14	DGND2	Digital Ground
15	OSCOUT	Oscillator Output
16	DVCC	Digital Vcc
17	WIND	Timing Signal
18	DGND1	Digital Ground
19	SYNC	Separated Sync Output
20	SCANOUT	Test Scan Output

SDA5648 (VPS/PDC Decoder)

(1) Features

- Single-chip receiver for PDC data, broadcast either
  - in Broadcast Data Service Packet (BDSP) 8/30/2 according to CCIR teletext system B, or
  - in dedicated line no. 16 of the vertical blanking interval(VPS)
- Reception of Unified Data and Time (UDT) broadcast in BDSP 8/30/1
- Low external components count
- On-chip data and sync slicer
- IIC-Bus interface for communication with external micro-controller
- Selection of PDC/VPS operating mode software controlled by IIC-Bus register
- Pin and software compatible to VPS Decoder SDA5642
- Supply voltage : 5 V ±10 %
- Video input signal level : 0.7 Vpp to 1.4 Vpp
- Operating temperature range : 0 to 70°C

(2) General Description

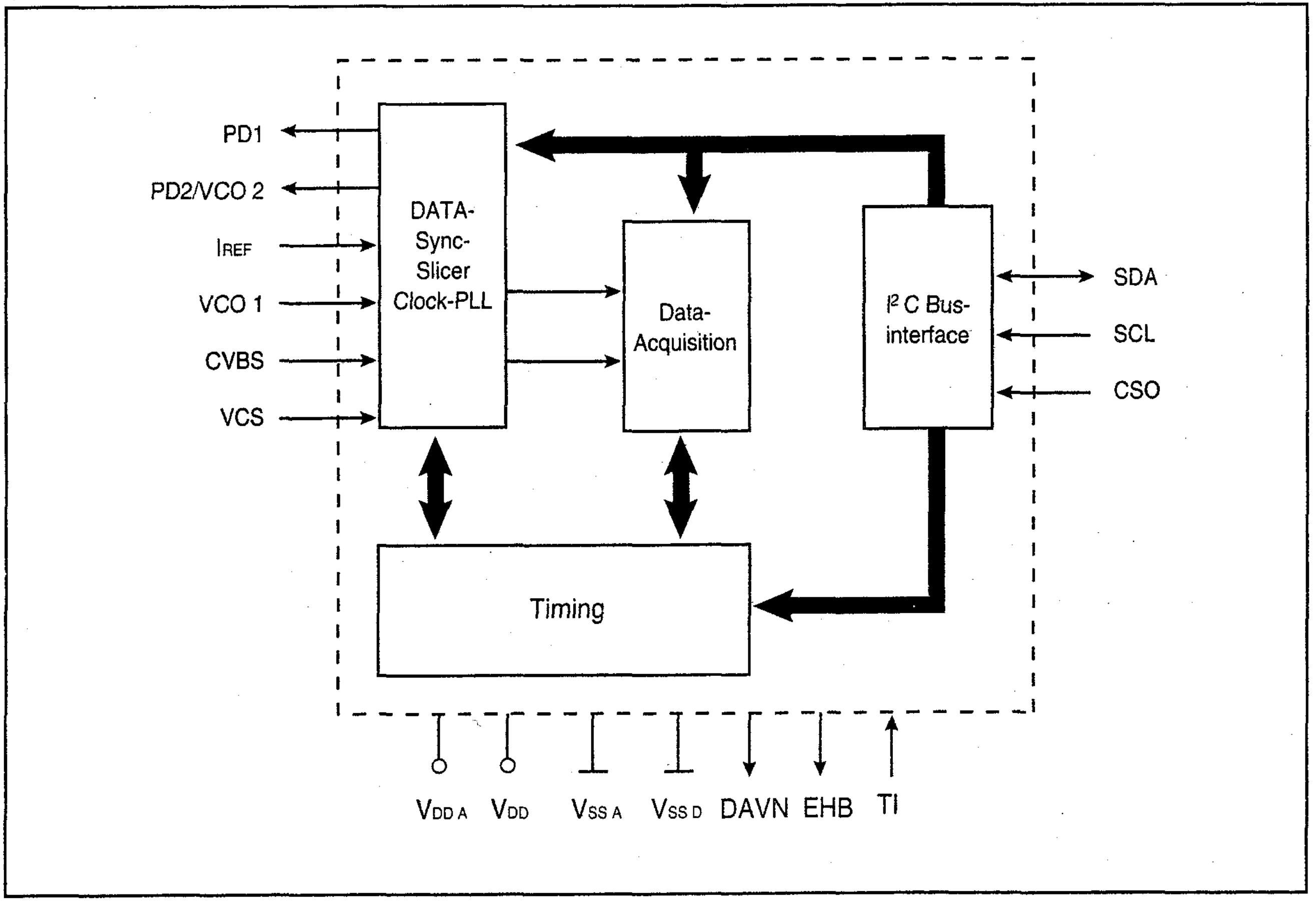
The CMOS circuit SDA 5648 is intended for use in video cassette recorders to retrieve control data of the PDC system from the data lines broadcast during the vertical blanking interval of a standard video signal.

The SDA 5648 is devised to handle PDC data transported either in Broadcast Data Service Packet(BDSP) 8/30 format 2 (bytes no. 13 through 25) of CCIR teletext system B or in the dedicated data line no. 16 in the case of VPS.

Furthermore it is able to receive the Unified Date and Time (UDT) information transmitted in bytes no. 5 through 21 of packet 8/30 format 1.

Operating mode (PDC/VPS) is selected by a control register which can be written to via the IIC-Bus interface.

(3) Block Diagram



(4) Pin Description

PIN	SYMBOL	DESCRIPTION
1	V_{SS}	GND
2	SCL	Serial Clock input of I^2C-Bus
3	SDA	Serial Clock input of I^2C-Bus
4	CS0	Chip select $20_H/21_H$, when pulled low $22_H/23_H$, when pulled high
5	VCS	Video Composite Sync output
6	DAVN	VPS/PDC data recognition
7	EHB	Identification signal for first half frame

PIN	SYMBOL	DESCRIPTION
8	TI	Test Input
9	PD1	Phase detector/charge pump output
10	PD2/ VCO2	Connector of the Loop filter for the SYSPLL
11	VCO1	Oscillator control input
12	I_{REF}	Reference current
13	CVBS	CVBS input
14	V_{DD}	Supply voltage (+ 5 V nom.)

TDA 4601(SMPS Controller)

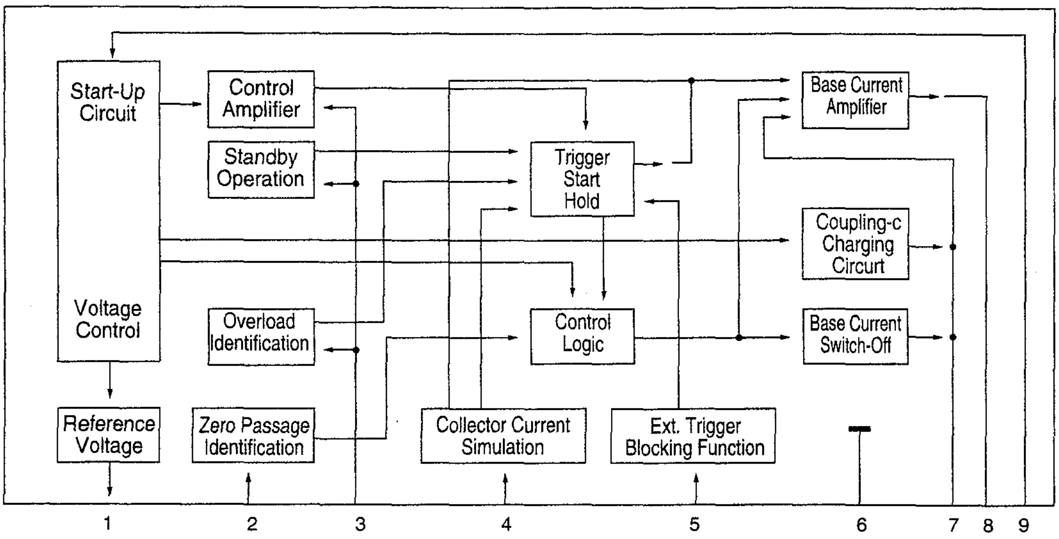
(1) Features

- Direct control of the switching transistor
- Low start-up current
- Reversing linear overload characteristic
- Base current drive proportional to collector current
- Protective circuit in case of disturbance

(2) General Description

The integrated circuit TDA4601 is designed for driving, controlling and protecting the switching transistor in self-oscillation flyback converter power supplies as well as for protecting the overall power supply unit.

(3) Block Diagram


Start-Up Circuit
Voltage Control
Control Amplifier
Standby Operation
Overload Identification
Reference Voltage
Zero Passage Identification
Trigger Start Hold
Control Logic
Collector Current Simulation
Ext. Trigger Blocking Function
Base Current Amplifier
Coupling-c Charging Circurt
Base Current Switch-Off
1
2
3
4
5
6
7
8
9

(4) Pin Description

PIN	DESCRIPTION
1	VREF output
2	Zero passage identification
3	Input control amplifier,overload amplifier
4	Collector current simulation
5	Connection for additional protective circuit
6	Ground
7	DC output for charging coupling capacitor
8	Pulse output-driving of switching transistor
9	Supply voltage

TDA9800 (VIF-PLL demodulator and FM-PLL detector)

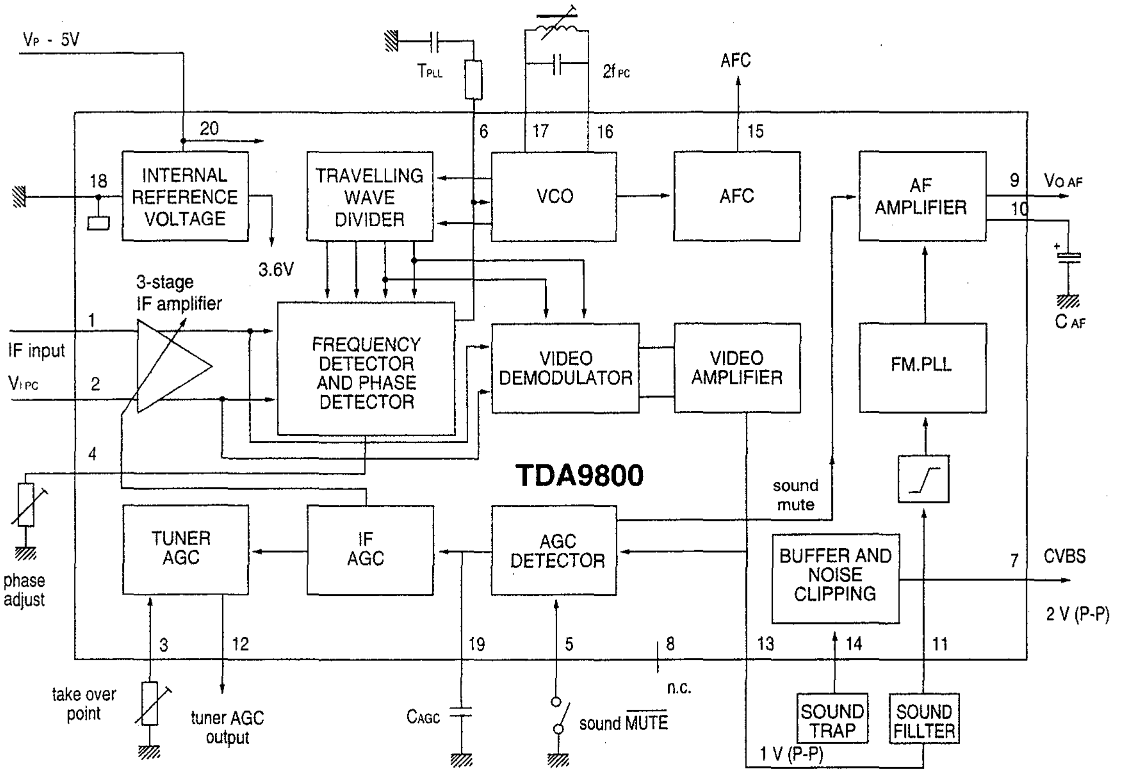
(1) Features

- Suitable for negative vision modulation
- Gain controlled 3-stage IF amplifier; suitable for VIF frequencies up to 60 MHz
- True synchronous demodulation with active carrier regeneration (ultra-linear demodulation, good intermodulation figures, reduced harmonics and excellent pulse response)
- Peak sync AGC
- Video amplifier to match sound trap and sound filter
- AGC output voltage for pnp tuner; adjustable take over point (TOP)
- AFC detector without extra reference circuit
- Alignment-free FM-PLL detector with high linearity
- Stabilizer circuit for ripple rejection and to achieve constant output signals

(2) General Description

Monolithic integrated circuit for vision and sound IF signal processing in TV and VTR sets.

(3) Block Diagram



VP - 5V
TPLL
2fPC
AFC
20
6
17
16
15
18
INTERNAL REFERENCE VOLTAGE
TRAVELLING WAVE DIVIDER
VCO
AFC
AF AMPLIFIER
9
10
VO AF
CAF
3.6V
3-stage IF amplifier
1
IF input
VIPC
2
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
FM.PLL
4
TDA9800
sound mute
phase adjust
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
7
CVBS
2 V (P-P)
3
12
19
5
8
13
14
11
take over point
tuner AGC output
CAGC
n.c.
sound MUTE
SOUND TRAP
SOUND FILLTER
1 V (P-P)
MEH191-1

FIG.1 Block diagram.

(4) Pin Description

PIN	SYMBOL	DESCRIPTION
1	$V_{i\ IFa}$	Vision IF differential input
2	$V_{i\ IFb}$	Vision IF differential input
3	TADJ	tuner AGC take over adjust(TOP)
4	PADJ	phase detector adjust
5	MUTE	mute switch input
6	T_{PLL}	PLL time constant OF phase detector
7	$V_{o\ CVBS}$	CVBS(positive) output signal
8	n.c.	not connected
9	$V_{O\ AF}$	audio frequency output signal
10	C_{AF}	decoupling capacitor of audio frequency amplifier

PIN	SYMBOL	DESCRIPTION
11	$V_{i\ IC}$	sound intercarrier input signal
12	TAGC	tuner AGC output
13	$V_{o\ VID}$	video and sound intercarrier output signal
14	$V_{i\ VID}$	video input signal to buffer amplifier
15	AFC	automatic frequency control output
16	VCO1	VCO reference circuit for 2 f_{PC}
17	VCO2	VCO reference circuit for 2 f_{PC}
18	GND	GND
19	C_{AGC}	AGC capacitor
20	V_P	positive supply voltage

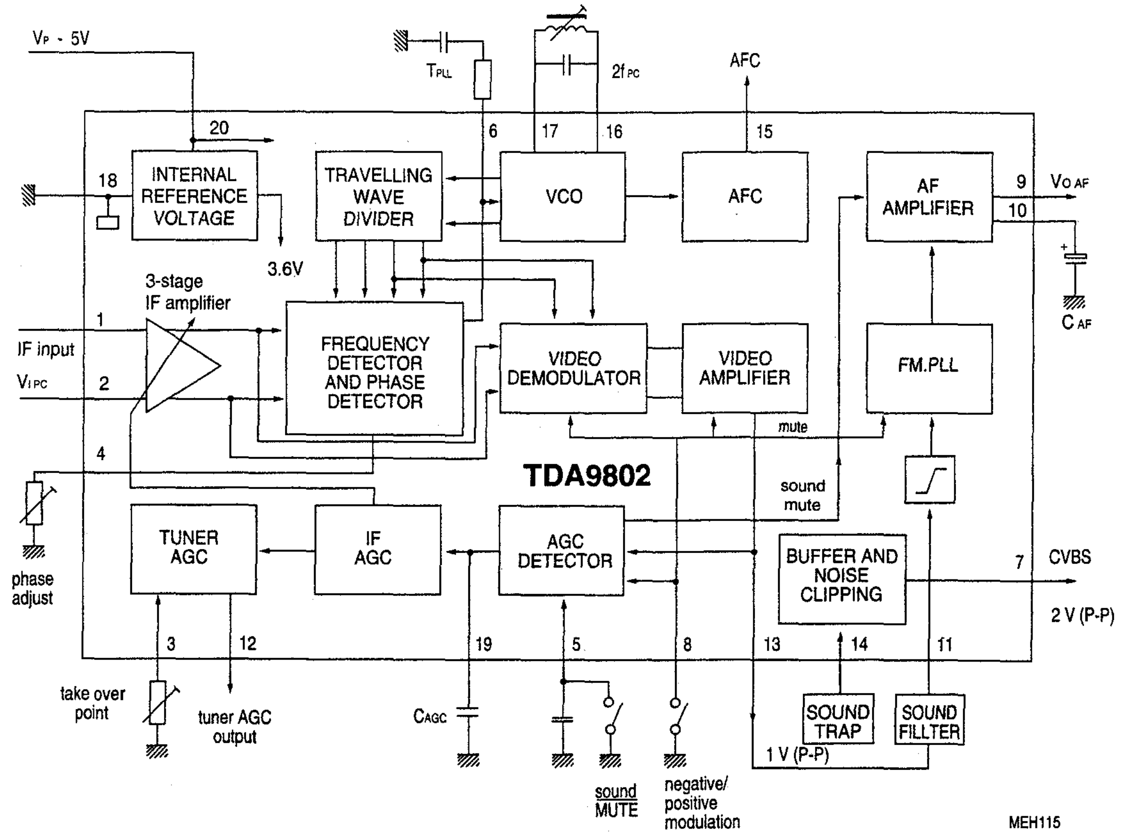
TDA9802 (Multistandard VIF-PLL demodulator and FM-PLL detector)

(1) Features

- Suitable for negative vision modulation
- Gain controlled 3-stage IF amplifier; suitable for VIF frequencies up to 60 MHz
- True synchronous demodulation with active carrier regeneration (ultra-linear demodulation, good intermodulation figures, reduced harmonics and excellent pulse response)
- Peak sync AGC for negative modulation, e.g. B/G standard
- Peak white AGC for positive modulation, e.g. L standard
- Video amplifier to match sound trap and sound filter
- AGC output voltage for tuner; adjustable take over point (TOP)
- AFC detector without extra reference circuit
- Alignment-free FM-PLL detector with high linearity
- Stabilizer circuit for ripple rejection and to achieve constant output signals

(2) General Description

Monolithic integrated circuit for vision and sound IF signal processing in Multistandard TV and VTR sets.



V_P - 5V
T_{PLL}
$2f_{PC}$
AFC
20
6
17
16
15
18
INTERNAL REFERENCE VOLTAGE
TRAVELLING WAVE DIVIDER
VCO
AFC
AF AMPLIFIER
9
10
$V_{O\,AF}$
C_{AF}
3.6V
3-stage IF amplifier
1
IF input
V_{IPC}
2
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
FM.PLL
mute
4
TDA9802
sound mute
phase adjust
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
7
CVBS
2 V (P-P)
3
12
19
5
8
13
14
11
take over point
tuner AGC output
C_{AGC}
SOUND TRAP
SOUND FILLTER
1 V (P-P)
sound MUTE
negative/ positive modulation
MEH115

FIG.1 Block diagram.

(4) Pin Description

PIN	SYMBOL	DESCRIPTION
1	$V_{i\,IFa}$	Vision IF differential input
2	$V_{i\,IFb}$	Vision IF differential input
3	TADJ	tuner AGC take-over adjust (TOP)
4	PADJ	phase detector adjust
5	C_{BL}	black level capacitor, mute switch input
6	T_{PLL}	PLL time constant OF phase detector
7	$V_{o\,CVBS}$	CVBS(positive) output signal
8	STD	standard switch negative = HIGH positive = LOW
9	$V_{O\,AF}$	audio frequency output signal
10	C_{AF}	decoupling capacitor of audio frequency amplifier

PIN	SYMBOL	DESCRIPTION
11	$V_{i\,IC}$	sound intercarrier input signal
12	TAGC	tuner AGC output
13	$V_{o\,VID}$	video and sound intercarrier output signal
14	$V_{i\,VID}$	video input signal to buffer amplifier
15	AFC	automatic frequency control output
16	VCO1	VCO reference circuit for 2 f_{PC}
17	VCO2	VCO reference circuit for 2 f_{PC}
18	GND	GND
19	C_{AGC}	AGC capacitor
20	V_P	positive supply voltage

TDA9830 (TV sound AM-demodulator and audio source switch)

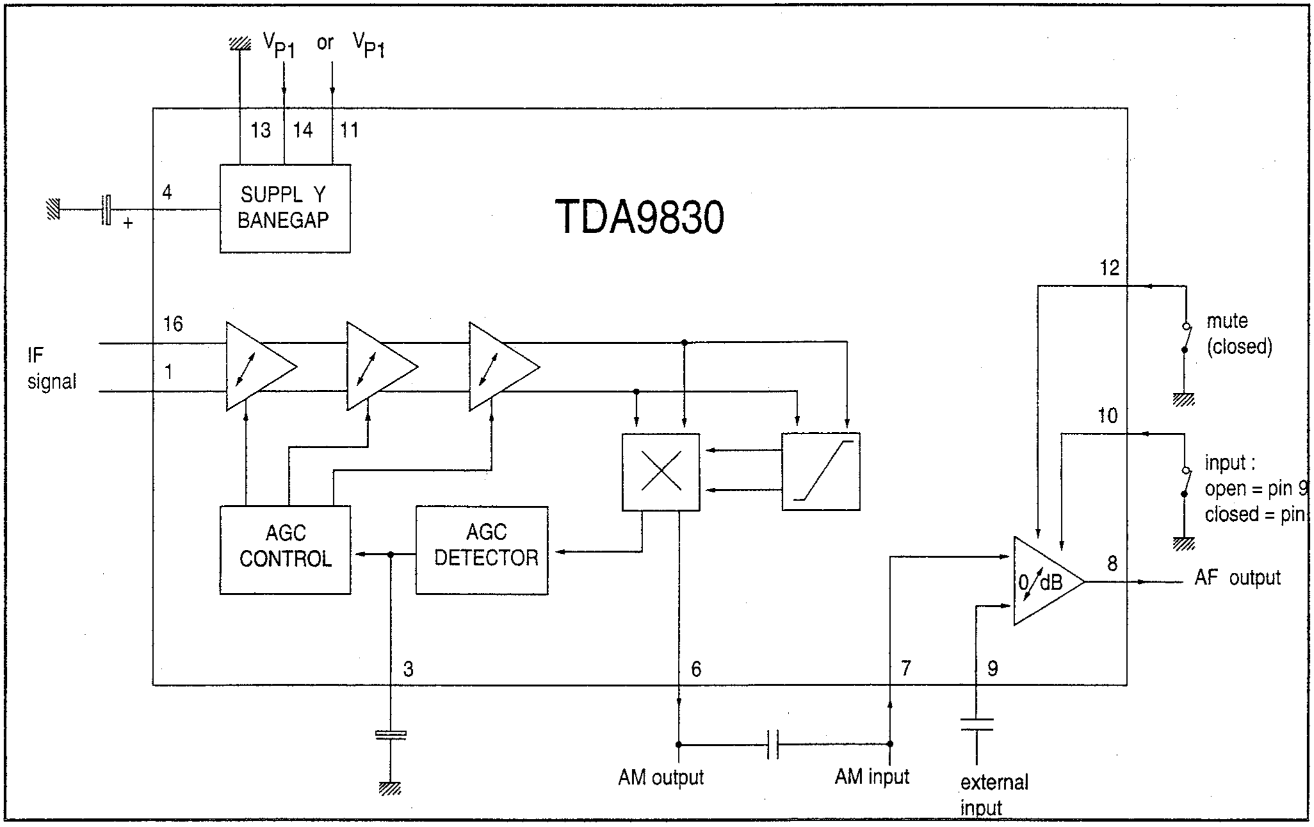
(1) Features

- Adjustment free wideband synchronous AM demodulator
- Audio source-mute switch(low noise)
- Audio level according EN55049
- 5 to 8 V power supply or 12 V alternative
- Low power consumption

(2) General Description

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L and L' standard. The IC provides an audio source selector and a mute switch.

(3) Block Diagram


V_{P1} or V_{P1}
13
14
11
4
+
SUPPL Y BANEGAP
TDA9830
12
mute (closed)
16
1
IF signal
10
input :
open = pin 9
closed = pin
AGC CONTROL
AGC DETECTOR
0/dB
8
AF output
3
6
7
9
AM output
AM input
external input

(4) Pin Description

PIN	SYMBOL	DESCRIPTION
1	IFIN	sound IF differential input signal
2	n.c.	not connected
3	CAGC	AGC capacitor
4	CREF	REF voltage filtering capacitor
5	n.c.	not connected
6	AMOUT	AM demodulator output
7	AMIN	input signal (from AM) to audio switch
8	AFOUT	output signal from audio switch

PIN	SYMBOL	DESCRIPTION
9	EXTIN	input signal (from external) to audio switch
10	SWITCH	switch input select control
11	V_{p2}	supply voltage +12V (alternative)
12	MUTE	mute control
13	GND	ground (0 V)
14	V_{p1}	supply voltage +5 to +8 V
15	n.c.	not connected
16	IFIN	sound IF differential input signal

TDA1519B (BTL or STEREO audio amplifier)

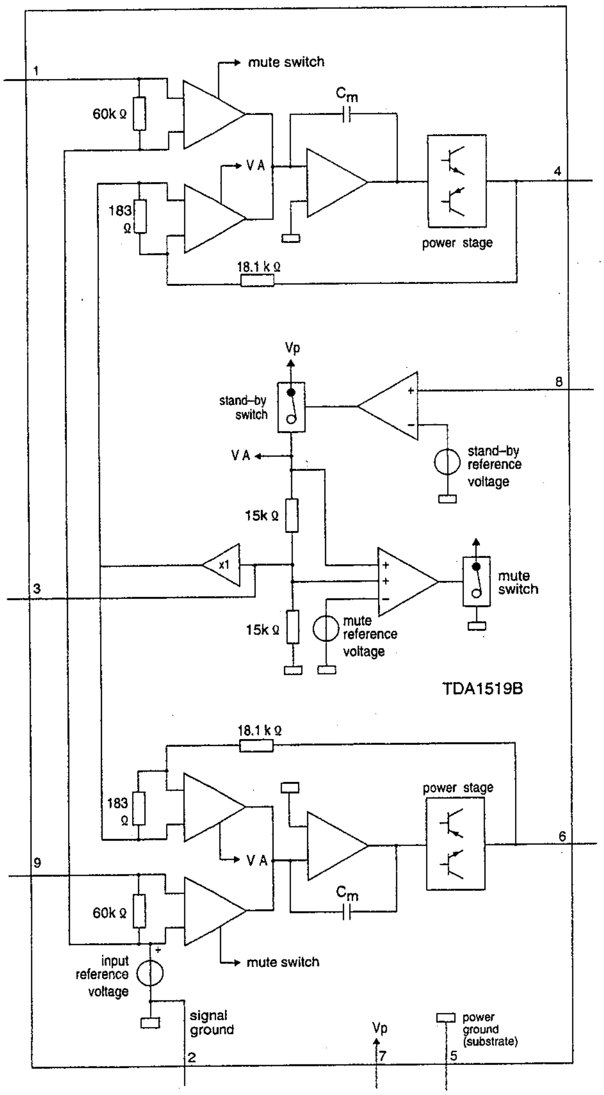
(1) Features

- Requires very few external components for Bridge Tied Load (BTL)
- Stereo or BTL application
- High output power
- Low offset voltage at output (important for BTL)
- Fixed gain
- Good ripple rejection
- Mute/stand-by switch
- Load dump protection
- SC and DC short-circuit-safe to ground and VP
- Thermally protected
- Reverse polarity safe
- Capability to handle high energy on outputs (VP = 0 V)
- No switch-on/switch-off plop
- Protected against electrostatic discharge
- Identical inputs (inverting and non-inverting)
- Compatible with TDA1519A (except output power)

(2) General Description

The TDA1519B is an integrated class-B dual output amplifier in a 9-lead single in-line (SIL) plastic medium power package. The device is primarily developed for car radio applications.

(3) Block Diagram


1
mute switch
Cm
60k Ω
V A
4
183 Ω
power stage
18.1 k Ω
Vp
8
stand–by switch
V A
stand–by reference voltage
15k Ω
x1
3
mute switch
mute reference voltage
15k Ω
TDA1519B
18.1 k Ω
183 Ω
power stage
6
9
V A
Cm
60k Ω
input reference voltage
mute switch
signal ground
2
Vp
7
power ground (substrate)
5

PRINTING

1	NINV	non-inverting input
2	GND1	ground (signal)
3	RR	supply voltage ripple rejection
4	OUT1	output 1
5	GND2	ground (substrate)
6	OUT2	output 2
7	Vp	positive supply voltage
8	M/SS	mute/stand-by switch
9	INV	inverting input

MC14053BCP (IC CMOS LOGIC)

(1) Features

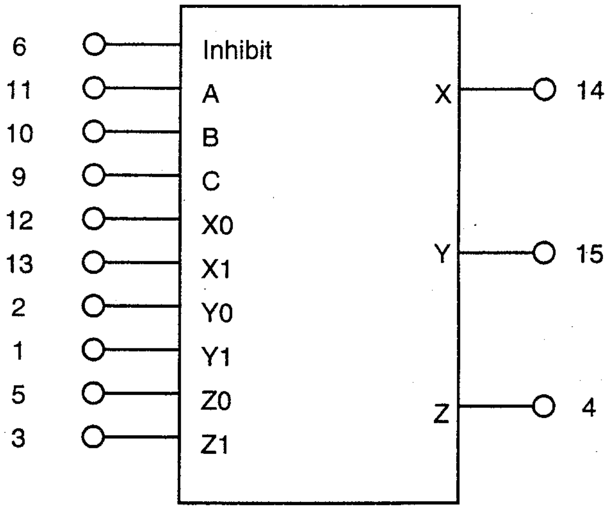
- Triple Diode Protection on Control Inputs
- Switch Function is Break Before Make
- Supply Voltage range - 3.0 Vdc to 18 Vdc
- Linearized transfer characteristics

(2) General Description

The MC14053B analog multiplexer are digitally controlled analog switches. The MC14053B effectively implements an SPDT solid state switch. The device features low ON impedance and very low OFF leakage current. Control of analog signals up to the complete supply voltage range can be achieved.

(3) Block Diagram

MC14053B
Triple 2-Channel Analog
Multiplexer/Demultiplexer



VDD = Pin16
VSS = Pin8
VEE = Pin7

■CP-350 CIRDUIT DESCRIPTION

The function of the circuits used in CP-350 are described in this chapter. For the component numbers used in this description, refer to the circuit diagram.

1. Small Signal Part with TDA8362

TDA8362 is realized in BIMOS process; the high frequency bipolar process is used for video processing and the MOS process is used for the digital part.

TDA8362 combines all small signal functions, except the tuning, required for a colour television receiver. Newly developed internal circuitry, such as integrated luminance delay line, chroma bandpass and trap, PLL sound demodulator and switches, reduce the number of required pins, external components and alignments.

The reference tuned circuit is the only remaining alignment for this 52 pins (S-Dil) TV-processor.

The alignment-free SECAM add-on colour decoder circuit (TDA8395) can be used for applications with automatic standard switching.

The internal functions of TDA8362 are

- Completely symmetrical AC-coupled vision I.F. amplifier and synchronous video demodulator
- A.G.C. detector suited for positive and negative modulation
- Tuner A.G.C., for PNP tuners
- Sample and hold A.F.C. circuit, with internal 90° phase shift
- Video pre-amplifier
- Inputs and switches for external audio, CVBS and S-VHS signals
- Sound I.F. limiter, automatic PLL demodulator and pre-amplifier with DC volume control.
- Separate supply pin to start the horizontal circuitry from the mains rectifier
- Horizontal synchronization circuit with 2 control loops
- Vertical synchronization (divider system), automatic 50/60Hz adaption
- Vertical and horizontal drive circuits
- PAL/NTSC colour decoder, with automatic standard switching
- Chroma filters (bandpass and trap) with automatic system adaption
- Luminance delay line
- Peaking circuit is the luminance channel
- Mute function
- X-ray protection possibility.

1.1. Vision I.F. Amplifier, Video Demodulator and Identification Circuit.

- The vision I.F. amplifier consists of three AC-coupled differential stages.
  The gain control per stage is more than 20dB, which results in a total gain control of 64dB min. The amplifier is completely symmetrical, which has the advantage of a less critical application; the I.F. amplifier inputs can be coupled directly to the SAW-filter output.
  The input impedance is 2k in parallel with 3pF.
  The input sensitivity for on-set of A.G.C. is 70 V (typ.), for I.F. frequencies between 38.9MHz and 58.75MHz.
- The reference carrier for the video demodulator is obtained via passive regeneration of the picture carrier. The reference tuned circuit is connected between pin 2 and 3. The IC and handle positive and negative modulated signals, the polarity of the demodulation can be switched at pin 1(open=neg. modulation, high=pos. modulation). A transmitter identification circuit operates independently of the synchronization circuit, to allow separate use of the front-end section and the display section of the TDA8362.

1.2. A.G.C., Tuner A.G.C. and A.F.C.

- The A.G.C. detector operates at top-sync level for signals with negative modulation and at peak-white level for positive modulated signals. This A.G.C. detector is gated for negative modulated signals to reduce sensitivity to impulsive noise. The time constant capacitor (C216) is connected externally at pin 48.
- The tuner AGC take-over point can be set by adjusting the DC-voltage at pin 49, with a potentiometer of 10k (R010). The tuner A.G.C. (pin 47) is an open collector output stage with an output swing of 2mA min. the voltage swing, required by the tuner, can be obtained with an external resistor network, connected at pin 47. Pin 47 may rise 2V above the actual supply voltage level for min. gain.
- The A.F.C. circuit is driven by the same reference signal as the video demodulator. A sample and hold circuit avoids video bread-through from the video demodulator to the A.F.C. voltage. The A.F.C. output voltage range is from 0 to 8V.

1.3. Sound Circuit

The sound carrier which is present at the video output pin 7 is fed via the sound bandpass to the sound input at pin5.

This has a double function; sound I.F. input (AC) and volume control (DC). The filtered intercarrier signal is fed to an amplifier/limiter circuit and demodulated by a PLL demodulator. This PLL demodulator tunes automatically to the incoming frequency, hence no alignment is required. The A.F. signal (pin 50) has an amplitude of 700mVrms at maximum volume control setting (f = ±50KHz). This volume control voltage is between 0 and 5V.

The de-emphasis capacitor (CC211) is connected externally at pin 1. The noncontrolled audio signal (Peri-television) is also obtained from pin 1 via a amplifier buffer stage (Q730 & Q741) and has an amplitude of 500mVrms (f=300KHz).

Audio input signal from an external source with an amplitude up to 350mVrms(+/- 6dB) can be fed to pin 6. The audio switch is controlled via the pin 16, as described in Chapter 1.8. The volume control operates upon the external audio input signal, when TDA8362 is switched to the external mode.

1.4. Horizontal and Vertical Synchronization

- The incoming video signal, pin 15 for the video signal is fed to the synchronization separator circuit. Internally the black level and the top sync level are detected, next the synchronization pulses are amplified to a fixed level and sliced at 50% of that level. In this way a very good synchronization performance is obtained.

  The separated synchronization pulses are fed to the first phase detector circuit and to the coincidence detector. The components which determine the loop gain of the first phase detector are connected at pin 40 (CC213, C218 and RC222). The coincidence detector is only used to detect whether the line oscillator is synchronized, not for transmitter identification.

  The line oscillator is running at twice the line frequency and locked to the X-tal controlled oscillator frequency of the colour decoder, consequently no adjustment is required. The free-running frequency has a maximum deviation of 2% compared to the nominal frequency.

  The second phase detector generates the pulses for the horizontal driver stage (pin 37). The loop filter capacitor (CC212) is connected at pin 39. Horizontal shift can be obtained by a potentiometer and series resistor (R012) connected at pin 39.

  The TDA8362 has a separate start-up circuit for the horizontal oscillator (pin 36). In case this feature is used for starting the horizontal deflection the resistor connected at the base of the horizontal driver transistor must be connected to the start supply as well (pin 37 is an open collector). For applications which do not require a start-up function pin 36 must be connected to the main supply voltage (pin 10).
- The vertical drive pulses (pin 43) are generated by a divider circuit. The vertical ramp generator components are connected at pin 42. DC feedback voltage from the vertical deflection stage must be connected at pin 41.

1.5. Integrated Video Filters

- The TDA8362 has an alignment-free internal chroma bandpass and trap circuit. These filters are realized by means of gyrator circuits and they are tuned by tracking to the frequency of the X-tal controlled oscillator.
- The luminance delay and the delay required for peaking are also realized by gyrator circuits. The peaking circuit can be controlled by u-processor output voltage.

1.6. Colour Decoder

- The colour decoder contains an alignment-free X-tal oscillator, a killer circuit and the colour difference signals demodulators.

The decoder adapts automatically for PAL and NTSC signals. With the SECAM add-on decoder TDA8395 an alignment free multi-standard decoder with automatic selection can be built. This makes the application of the TDA8362 very flexible.
The following applications are possible:

- PAL-only
Connect one or two crystals to the IC(when just one crystal is used the other crystal pin has to be connected to ground via a resistor) and the hue control pin to the positive supply via a resistor of about 30k . In this condition the decoder will not search for NTSC signals.

- PAL/NTSC
Connect one or two crystals to the IC and supply a control voltage between 0 and 5V to the hue control pin. The decoder will identify PAL and NTSC signals at one or two frequencies. For the reception of the PAL-N and the PAL-M standard the two 3.6MHz X-tals must be connected to pin 34. The switching between the X-tals must be made externally.

- PAL/SECAM
The chroma input signal for the SECAM decoder must be the same as that of the PAL decoder. This could be realized by means of an external switch which is connected in parallel with the internal video switch. In the TDA8362 we have a better alternative. When the NTSC option is not required the output signal of the switch can be obtained from the hue control input when this input is connected to the positive supply line via a suitable resistor.

- PAL/ SECAM/ NTSC
In this case the hue control must be active so that the previous application is not possible. Therefore an external video switch has to be added for this application.
In CP-350, two applications(PAL-only and PAL/SECAM) are possible.
The burst phase detector locks the X-tal oscillator with the burst signal.
Two gain modes provide an increased catching range when the PLL is un-locked and low ripple voltage and good noise immunity when the PLL is locked. The burst phase detector operates during the burst key period only, to prevent the PLL from being disturbed by the chroma signal.
The killer circuit switches-off the R-Y and B-Y demodulators at too low input signal condition (burst amplitude). Proper hysteresis prevent constant on/off switching at a certain input level.

1.7. R.G.B Output and Input Circuits

The colour difference signals are matrixed with the luminance signal to obtain the RGB output signals (pin 18, 19 and 20). Linear have been chosen to interface external RGB signals (pin 22, 23 and 24) coming from the Peritelevision connector. The contrast and brightness control operate both on internal and external signals. The data insertion pin 21 has a second detection level at 4V. Above this level the RGB outputs are blanked. In this way onscreen display (OSD) signals can be supplied directly to the inputs of the video output stages without any interaction to the RGB outputs of the colour decoder part of the TDA8362.

1.8. Switches for External Audio, Video

The audio and video switches are controlled via the pin 16, according to the following table:

Level Pin 16	Int. Video	Ext. Video	Int. Audio	Ext. Audio
DC < 0.5V	ON	OFF	ON	OFF
DC > 7.5V	OFF	ON	OFF	ON

2. TUNER

(1) General Description

The tuner includes a pass band input circuit connected to gate 1 of a MOSFET tetrode.

The RF signal is transferred to a specific tuner I.C. by a double tuned circuit.

The low output impedance of the symmetrical I.F. amplifier ensures an excellent suppression of the SAW filter transients.

An integrated circuit performs all the tuning functions of a PLL system.

The tuner includes a splitter amplifier having one input and two outputs : one output is internally connected to the tuning section while the other one is available at the 75 ohm male R.F. connector.

(2) Channel Coverage

MODEL	TUNER	SYSTEM	BAND	CHANNEL	PIF
PA	FAL2163/84 FL2171/84A	I	UHF	CH 21 - CH 69	39.5MHz
FA/LA	FAL2463/84 FL2471/84	B/G	VHF-L	CH 2- CH 4 CH S1' - CH S3' CH S1 - CH S2	38.9MHz
			VHF-H	CH S3 - CH S10 CH 5 - CH 12 CH S11 - CH S20	
			UHF	CH 21 - CH 69	

* FAL2163/84A and FAL2463/84 include a splitter amplifier.

3. SECAM Decoder TDA8395

The TDA8395 is an alignment-free SECAM colour decoder and can be used in conjunction with the TDA8362. It includes the Cloche filter, demodulator and identification circuit. The TDA8395 application needs very few external components.

The cloche filter is a gyrator-capacitor type filter. Its resonance frequency is controlled during the calibration period and offset during scan for the right resonance frequency. The required reference frequency for calibration must be connected at pin 1 and obtained from the TDA8362 (pin 32). The two (or three-) level sandcastle pulse has to be connected at pin 15 (TDA8362 pin 38) and used for generation of the blanking periods and provides clock information for the identification circuit.

The chroma signal at pin 16 connected to pin 27 of the TDA8362 is demodulated by a PLL demodulator, which uses the reference frequency and a bandgap reference to force the PLL to the desired demodulation characteristic.

Digital line identification is implemented to check the incoming signal for SECAM. IF SECAM is detected and pin 1 will sink a current of 150uA. Together with the TDA8362 the voltage at this pin will become high (5.5V). In this case the colour difference signal outputs will be switched on. These outputs will be disconnected and high-ohmic when no SECAM is detected for two frame periods the demodulator will be initialized before trying again.

4. Baseband Delay Line TDA4661

The TDA4661 are integrated baseband delay lines of 64usec for colour television receivers. It can be connected to the TDA8362 and TDA8395 without the need of switches and alignments. The TDA4661 consists of two main blocks.

- Two comb filters with a delay time of 64usec in switched capacitor
- Internal clock generation of 3MHz, line locked via the sandcastle pulse

TDA4661 operates according to the mode demanded by the colour transmission standard. In PAL mode it operates as a geometric adder to satisfy the requirements of PAL demodulation, in NTSC mode it reduces cross-colour interference (comb-filtering) and in SECAM mode the delay line repeats the colour difference signal on consecutive horizontal scan lines.

The colour difference signals are AC-coupled to pin 14 and 16 and clamped by the input stages. The internal clock drives the delay lines to obtain the required 64usec. The clock pulses are derived from a 6MHz Current Controlled Oscillator which is line locked via a PLL with the sandcastle pulse, connected at pin 5. Sample and hold low pass filters suppress the clock signal. The delayed and un-delayed signal are added buffered and fed to the output pins 11 and 12.

5. Sound Output Stage TDA1519B

The TDA1519B is an integrated class-B dual output amplifier in a 9-lead single in-line (SIL) plastic medium power package.

The TDA1519B contains two identical amplifiers with differential input stages. The gain of each amplifier is fixed at 40dB. A special feature of this device is the mute/stand-by switch which has the following features :

- Low stand-by current (< 100uA)
- Low mute/stand-by switching current (low cost supply switch)
- Mute condition

6. VIF-PLL Demodulator and FM-PLL Detector TDA9800/02

The TDA980X multistandard vision IF and intercarrier mono sound FM demodulator family is a new generation of integrated circuits with active carrier regeneration for vision and sound IF signal processing in TV sets and VTR's with excellent signal performance.

TDA9800 is the basic type with a maximum of functionality as e.g. positive and negative modulation mode and alignment free FM demodulation. The other types are derived from TDA9802 with reduced functional content.

6.1 Vision IF input

The vision IF amplifier consists of three AC-coupled differential amplifier stages; each stage comprises a controlled feedback network with a pnp transistor.

6.2 IF and tuner AGC

The automatic control voltage to maintain the video output signal at a constant level is generated according to the transmission standard. For negative modulation the peak-sync level is detected, for positive modulation the peak-white level is detected. The AGC detector charges and discharges the capacitor on pin19 to set the IF gain and the tuner gain. The standard is switched by the voltage on pin8.

To reduce the response time for positive modulation (which needs a very long time constant) a black level detector increases the AGC capacitor discharge current (C_{BL}) for low-level video signals.

The AGC capacitor voltage is transferred to an internal IF control signal, and is fed to the tuner AGC to generate the tuner AGC output current on pin12 (open-collector output). The tuner AGC voltage take over point is adjusted on pin3. This allows the tuner and the IF SAW filter to be matched to achieve the optimal IF input level.

6.3 Frequency detector, phase detector and video demodulator

The IF amplifier output signal is fed to a frequency detector and to a phase detector. The frequency detector is operational before lock-in. A DC current is generated which is proportional to the frequency difference between the input frequency and the VCO frequency. After lock-in, the frequency detector and the phase detector generate a DC current proportional to the phase difference between VCO and input signals. The control signal for the VCO is provided by the phase detector.

The video demodulator is a linear multiplier, designed for low distortion and wide bandwidth. The vision IF input signal is multiplied by the in-phase component of the VCO output. The demodulated output signal is fed via an integrated low-pass filter (f_g = 12MHz) to the video amplifier for suppression of the carrier harmonics.

6.4 VCO and travelling wave divider AFC

The VCO operates with a symmetrically-connected reference LC-circuit, running at double vision carrier frequency. Frequency control is performed by voltage drive of an internal varicap diode. This varicap (oscillator)control voltage is also amplified and converted for the AFC output current generation. AFC output is a direct measure of the oscillator frequency.

The VCO signal is divided by two in a travelling wave divider, which generates two differential output signals with 90 degrees phase difference independent of frequency.

6.5 Video demodulator

The video demodulator is a linear multiplier, designed for low distortion and wide bandwidth. The vision IF input signal is multiplied by the in-phase component of the VCO output. The demodulated output signal is fed via an integrated low-pass filter (fg = 12MHz) to the video amplifier for suppression of the carrier harmonics. The polarity of the video signal is switched in the demodulator stage according to the TV standard.

6.6 Video amplifier, buffer and noise clipping

The video amplifier is a wide bandwidth operational amplifier with internal feedback. Dependent on transmission standard, a level shifter provides the same sync level for positive as for negative modulation. The video output signal at pin 13 is $1V_{PP}$ for nominal vision IF modulation in both standards. The input impedance of the 7dB wideband buffer amplifier (with internal feedback) is suitable for termination of ceramic sound trap filters.

The CVBS output (pin 7) provides a positive video signal of $2V_{PP}$.

Noise clipping is provided internally.

6.7 Sound demodulation

The FM sound intercarrier signal is fed to pin 11 and through a limiter amplifier before it is demodulated. This achieves high sensitivity and high AN suppression. The limiter amplifier consists of seven internal AC-coupled stages, minimizing the DC offset.

The FM-PLL demodulator consists of an integrated VCO (RC-oscillator), phase detector and loop filter.

The PLL is locked to the frequency modulated intercarrier signal coming from the limiter, so that the control voltage is superimposed by the audio voltage. The superimposed audio voltage is picked up from the loop-filter and further processed by the audio amplifier.

The audio frequency amplifier with internal feedback is designed for high gain and high common mode rejection. The low-level AF signal coming out of the FM-PLL demodulator is amplified and buffered in a low-ohmic audio signal output stage (pin 9). An external decoupling capacitor on pin 10 removes the DC voltage from the audio amplifier input.

6.8 Bandgap voltage stabilizer

The bandgap circuit generates internally a voltage of about 1.2V, independent of supply voltage and temperature. A voltage regulator circuit, connected to this voltage, produces a constant voltage of 3.6V, which is used as an internal reference voltage.

7. TV sound AM-demodulator and audio source switch TDA9830

7.1 Sound IF input

The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20dB gain. At the output of each stage is a multiplier for gain controlling (→ current distribution gain control). The overall control range is approximately -6 to +60dB and the frequency response (+3dB) of the IF amplifier is approximately 6 to 70MHz. The steepness of gain control is approximately 10mV/dB.

7.1 IF AGC

The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector. This AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage. The maximum charge/discharge current is approximately 5uA. This value in combination with the value of the AGC capacitor and the AGC steepness determines the lower cut-off audio frequency and the THD-figure at low modulation frequency of the whole AM-demodulator. Therefore a large time constant has to be chosen which leads to slow AGC reaction at IF level charge. To speed up the AGC in case of IF signal jump from low to high level, there is an additional comparator built in, which can provide additional discharge current from the AGC capacitor up to 5mA in a case of overloading the AM demodulator by the internal IF signal.

7.3 AM-demodulator

The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplied circuit. However the limiter output signal (which is not longer AM modulated) is also fed to the multiplier, which provides AM demodulation (in phase demodulation). After lowpass filtering ($f_g \approx 400$ KHz) for carrier rejection and buffering, the demodulator output signal is present on pin 6. The AM demodulator operates over a wide frequency range, so that in combination with the frequency response of the IF amplifier applications in a frequency range from approximately 6 MHz up to 70 MHz are possible.

7.4 Audio switch

This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0 dB) and frequency response ($f_g \approx 700$ KHz).

Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state.

The selected signal is present at pin 8. The decoupling capacitors at the input pins are needed, because the internally generated bias voltage for the input stages must not be influenced by the application in order to avoid DC-plop in case of switching.

The AM demodulator output is designed to provide almost the same DC voltage as the input bias voltage of the audio switch. But there may be spread between both voltages. Therefore it is possible to connect pin 6 directly to pin 7 (without a decoupling capacitor), but in this event the DC-plop for switching can increase up to 100 mV.

8. VPS/PDC Decoder SDA5648

The CMOS circuit SDA5648 is intended for use in video cassette recorders to retrieve control data of the PDC system from the data lines broadcast during the vertical blanking interval of a standard video signal.

The SDA5648 is devised to handle PDC data transported either in Broadcast Data Service Packet (BDSP) 8/30 format 2 (bytes no. 13 through 25) of CCIR teletext system B or in the dedicated data line no. 16 in the case of VPS.

Furthermore it is able to receive the Unified Date and Time (UDT) information transmitted in bytes no. 15 through 21 of packet 8/30 format 1.

Operating mode (PDC/VPS) is selected by a control register which can be written to via the I^2C-Bus interface.

9. Horizontal Deflection Stage

The horizontal drive pulses, pin 37 of TDA8362, are connected to the base of driver transistor Q402 via resistor R401.

The base current of the driver transistor is supplied via RC218 (pin 37 is an open collector output).

The driver transformer (T401) drives deflection transistor Q401.

T402 is EHT transformer (Flyback transformer) and generates the EHT-, focus- and G2-voltage, required by the picture tube. Furthermore the +185V supply and heater voltage are derived from this transformer.

At pin 7 the beam current information is measured via resistor R412. This information is used for reducing the contrast at too high beam currents (via D203).

The flyback voltage is clipped between +8V and ground by diodes D201, D202 to obtain a well shaped flyback pulse for feedback to the TDA8362 (pin 38).

A horizontal synchronization information required by a possible u-processor is obtained via R407 & D204 connected at pin 3 of the FBT.

10. Power Supply with TDA4601

TDA4601 is designed for driving, controlling, and protecting the switching transistor in flyback converter power supplies during start-up, normal, and overload operation as well as during disturbed operation.

TDA4601 drives as start voltage (16V$_{DC}$) being supplied at pin9 of TDA4601.

Continually, voltage (180V$_{AC}$→13V$_{DC}$, 270V$_{AC}$→20V$_{DC}$) is supplied at pin 8 of SMPS transformer (TSM-4445A1).

The function of power ON/OFF is activated by using switching transistor Q801 (KSD5072).

The pin1 of TDA4601 is REFERENCE VOLTAGE PIN, pin2 is AIR GAP PORT, pin3 is the ADJUSTMENT PORT of secondary B+ level, pin4 is AMP CONTROL PORT, pin7 is the ELECTRIC DISCHARGE PORT of switching transistor, and pin8 is OUTPUT VOLTAGE to drive switching transistor.

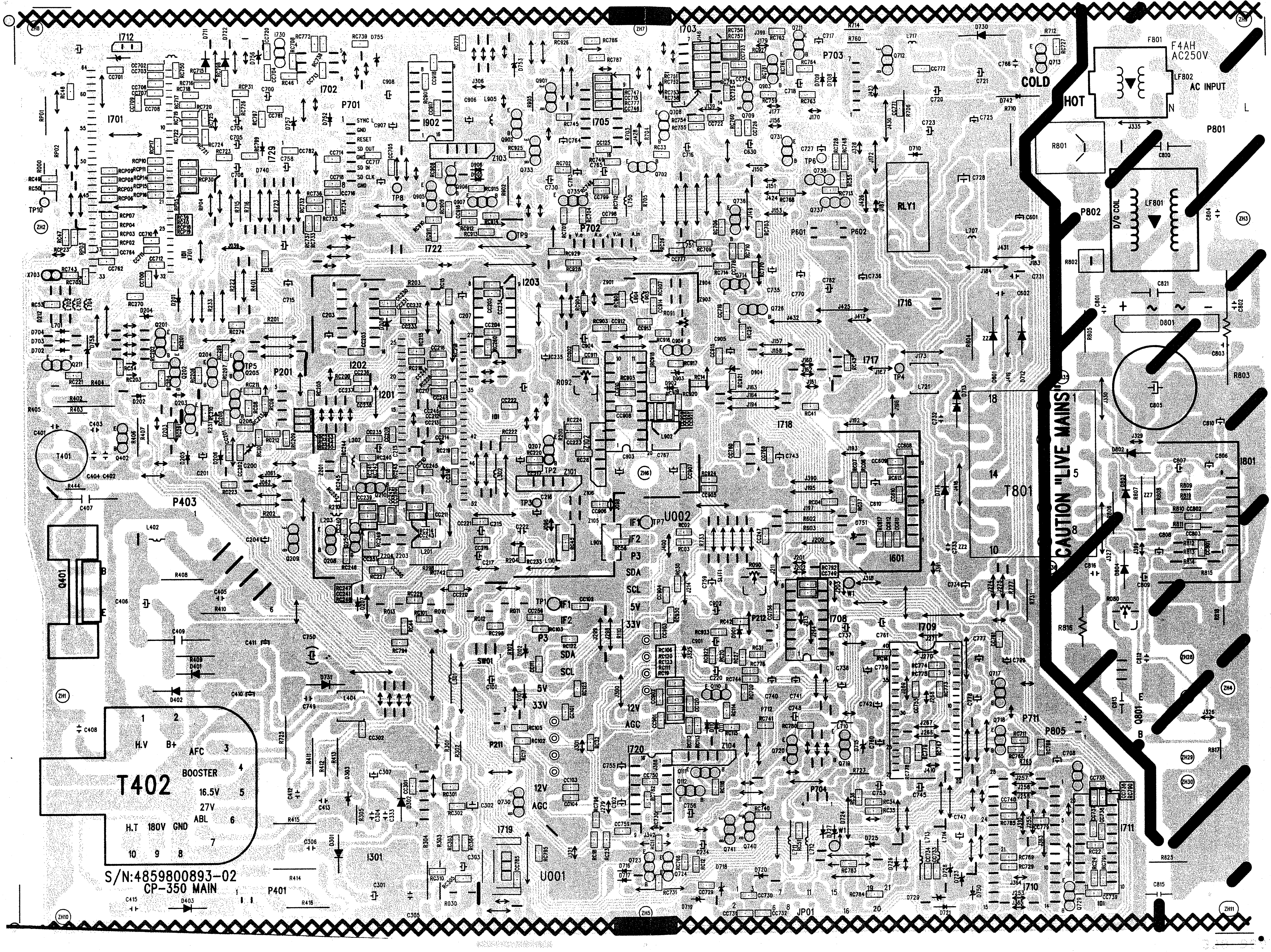
The voltage of secondary main B+ adjusts to 104V$_{DC}$ to make use of variable Volume (R080) at picture control maximum.

The protective operating mode of TDA4601 is that the base current shut-down activated by the control logic clamps the output of pin7 to 1.6V$_{DC}$.

As a result, the drive of switching transistor is inhibited.

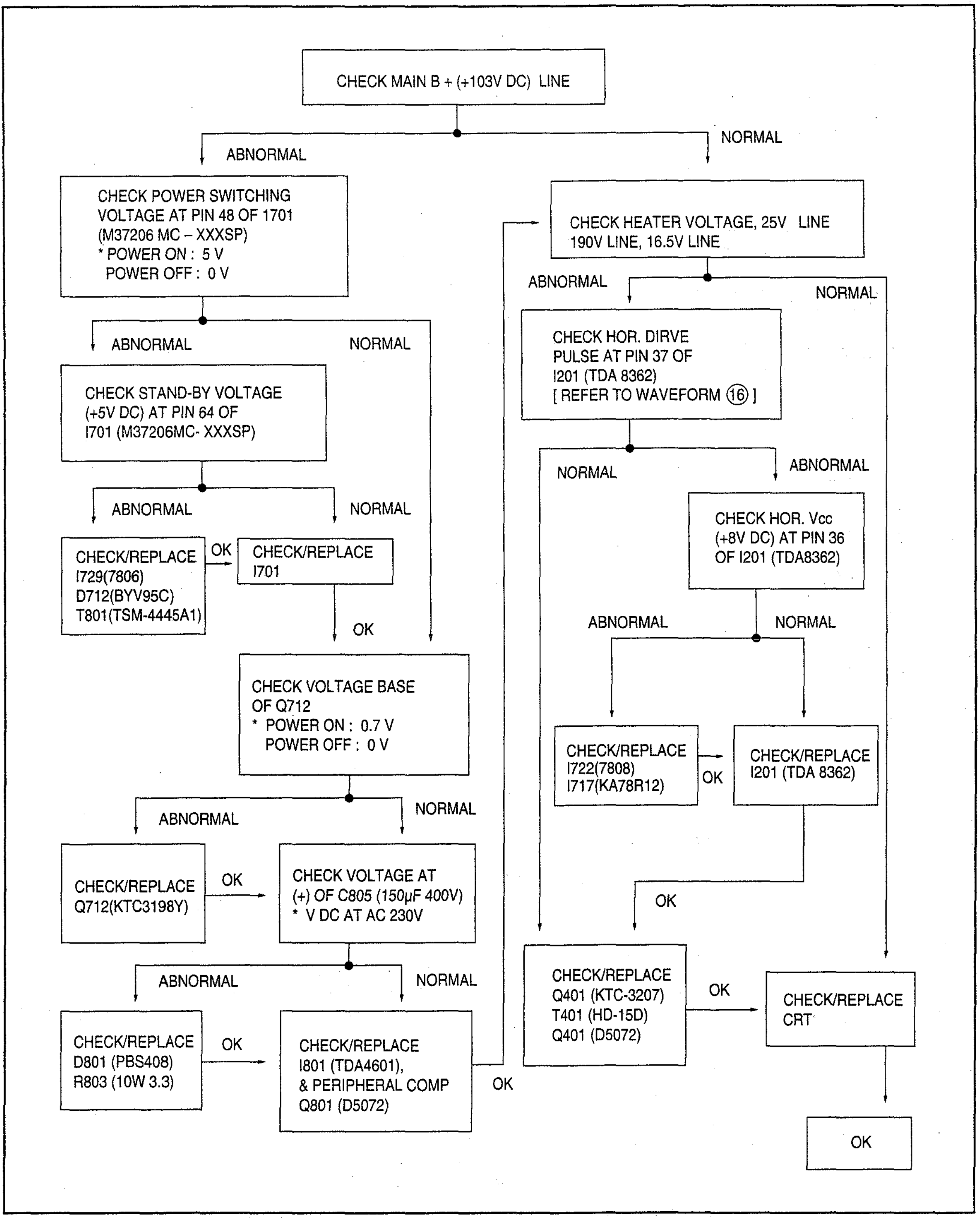
This protective measure is enabled if the supply voltage at pin9 reaches a value 6.7V.

TDA4601 has self-protective function.

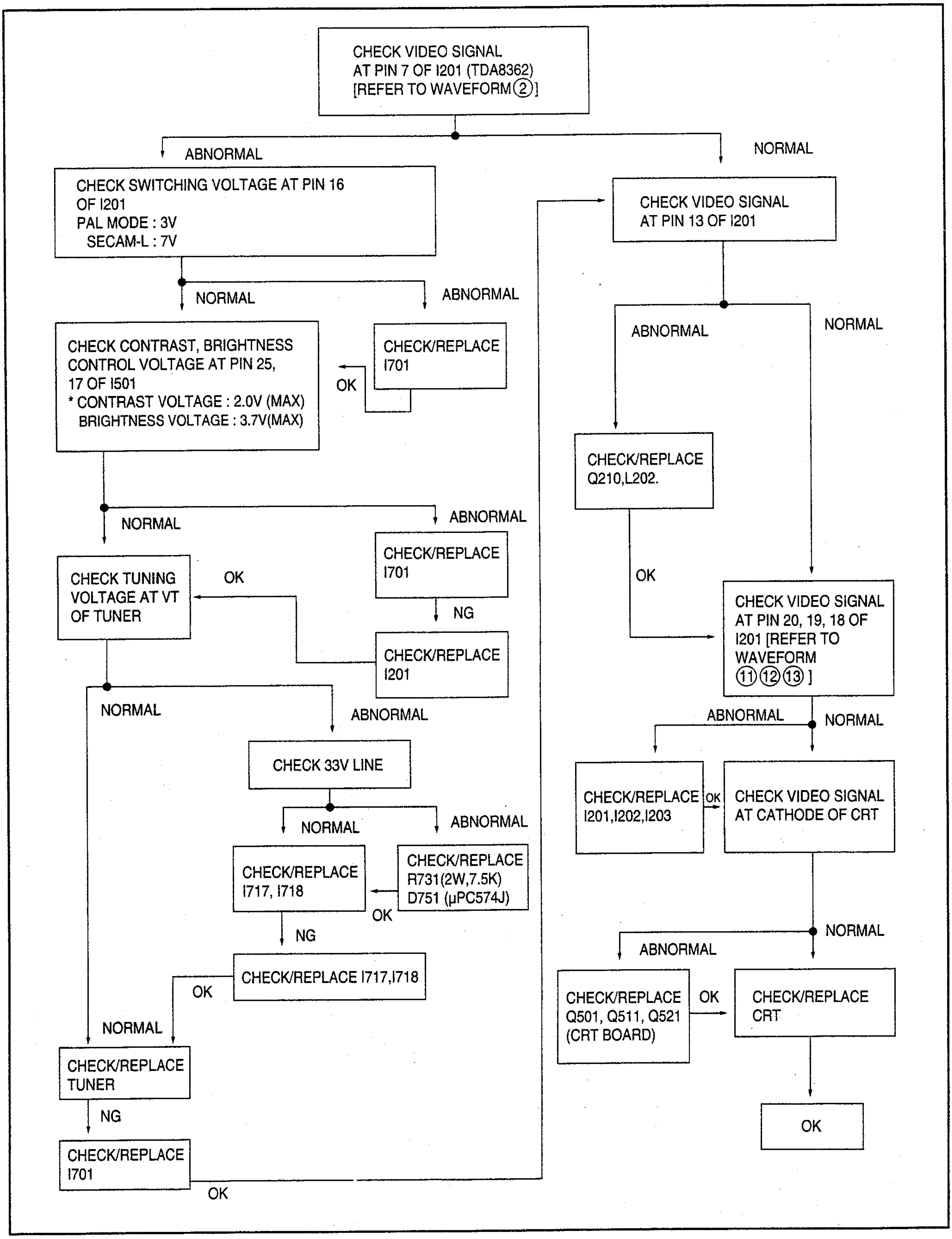

S/N:4859800893-02
CP-350 MAIN
T402
H.V
B+
AFC
BOOSTER
16.5V
27V
ABL
H.T
180V
GND
CAUTION "LIVE MAINS"
HOT
COLD
F4AH
AC250V
AC INPUT
LF802
LF801
D/G COIL
T801
RLY1
P801
P802
P403
P401
Q401
T401
U001
U002
I1701
I1702
I1703
I1705
I1709
I1711
I1718
I1719
I1720
I1722
I1801
I1902
I201
I202
I203
I301
I601
SDA
SCL
5V
33V
12V
AGC
P3
IF1
IF2
SW01
JP01

■TROUBLE SHOOTING CHARTS

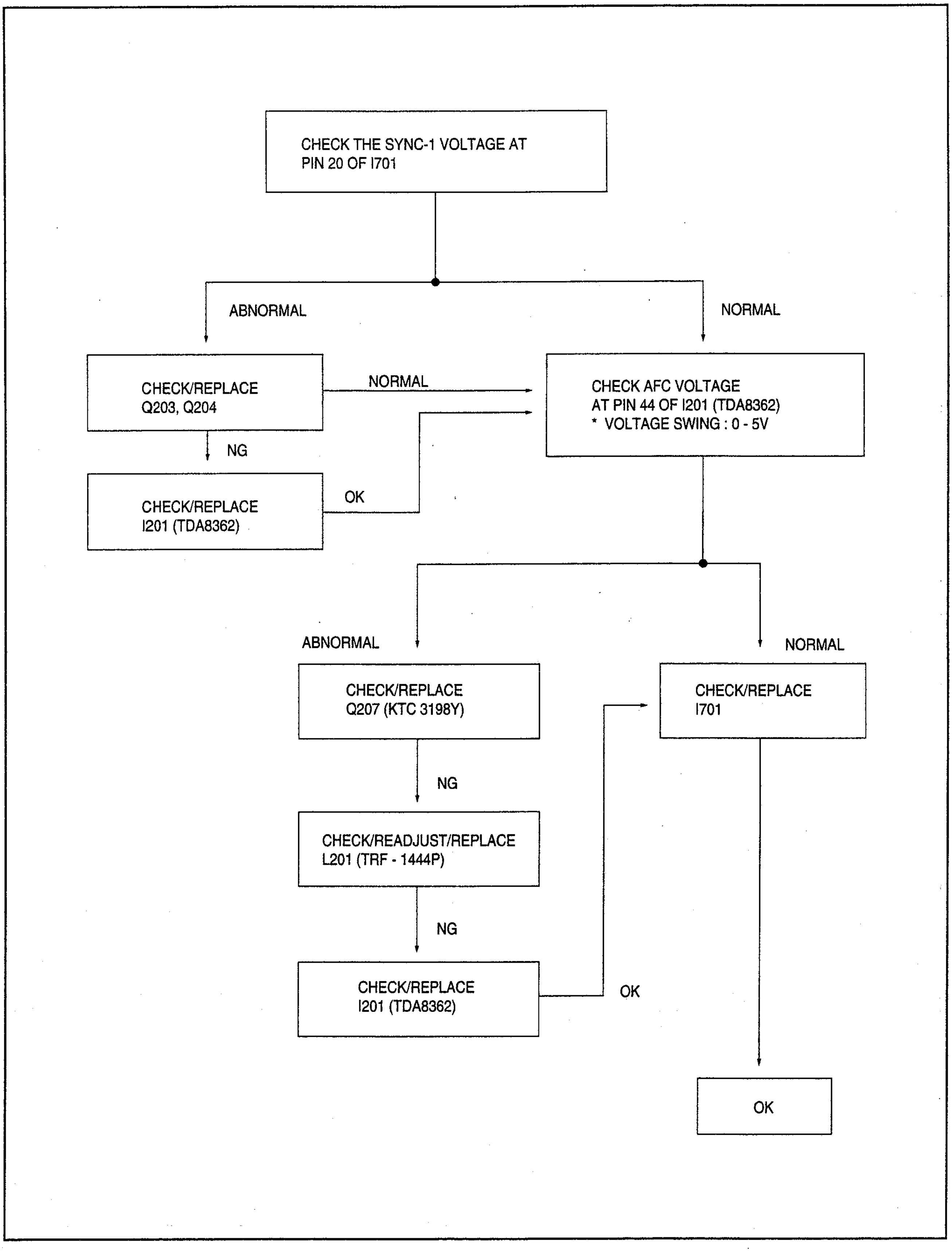
■NO RASTER


CHECK MAIN B + (+103V DC) LINE
ABNORMAL
NORMAL
CHECK POWER SWITCHING VOLTAGE AT PIN 48 OF 1701 (M37206 MC – XXXSP) * POWER ON : 5 V POWER OFF : 0 V
ABNORMAL
NORMAL
CHECK STAND-BY VOLTAGE (+5V DC) AT PIN 64 OF I701 (M37206MC- XXXSP)
ABNORMAL
NORMAL
CHECK/REPLACE I729(7806) D712(BYV95C) T801(TSM-4445A1)
OK
CHECK/REPLACE I701
OK
CHECK VOLTAGE BASE OF Q712 * POWER ON : 0.7 V POWER OFF : 0 V
ABNORMAL
NORMAL
CHECK/REPLACE Q712(KTC3198Y)
OK
CHECK VOLTAGE AT (+) OF C805 (150μF 400V) * V DC AT AC 230V
ABNORMAL
NORMAL
CHECK/REPLACE D801 (PBS408) R803 (10W 3.3)
OK
CHECK/REPLACE I801 (TDA4601), & PERIPHERAL COMP Q801 (D5072)
OK
CHECK HEATER VOLTAGE, 25V LINE 190V LINE, 16.5V LINE
ABNORMAL
NORMAL
CHECK HOR. DIRVE PULSE AT PIN 37 OF I201 (TDA 8362) [REFER TO WAVEFORM ⑯]
NORMAL
ABNORMAL
CHECK HOR. Vcc (+8V DC) AT PIN 36 OF I201 (TDA8362)
ABNORMAL
NORMAL
CHECK/REPLACE I722(7808) I717(KA78R12)
OK
CHECK/REPLACE I201 (TDA 8362)
OK
CHECK/REPLACE Q401 (KTC-3207) T401 (HD-15D) Q401 (D5072)
OK
CHECK/REPLACE CRT
OK

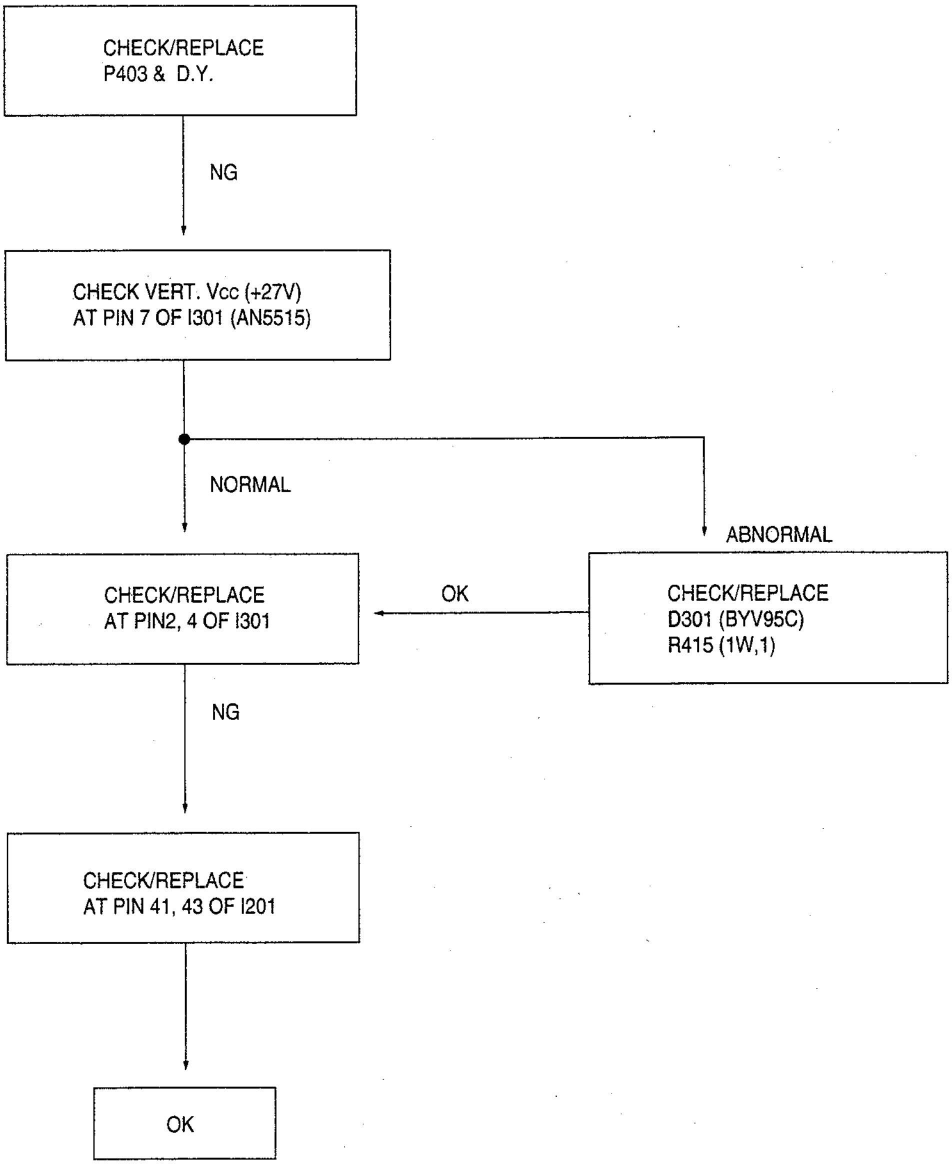
■NO PICTURE(RASTER OK)


CHECK VIDEO SIGNAL AT PIN 7 OF I201 (TDA8362) [REFER TO WAVEFORM ②]
ABNORMAL
NORMAL
CHECK SWITCHING VOLTAGE AT PIN 16 OF I201
PAL MODE : 3V
SECAM-L : 7V
CHECK VIDEO SIGNAL AT PIN 13 OF I201
NORMAL
ABNORMAL
CHECK CONTRAST, BRIGHTNESS CONTROL VOLTAGE AT PIN 25, 17 OF I501
* CONTRAST VOLTAGE : 2.0V (MAX)
BRIGHTNESS VOLTAGE : 3.7V(MAX)
CHECK/REPLACE I701
OK
ABNORMAL
NORMAL
CHECK/REPLACE Q210,L202.
NORMAL
ABNORMAL
CHECK/REPLACE I701
CHECK TUNING VOLTAGE AT VT OF TUNER
OK
NG
CHECK/REPLACE I201
OK
CHECK VIDEO SIGNAL AT PIN 20, 19, 18 OF I201 [REFER TO WAVEFORM ⑪⑫⑬]
NORMAL
ABNORMAL
CHECK 33V LINE
ABNORMAL
NORMAL
CHECK/REPLACE I201,I202,I203
OK
CHECK VIDEO SIGNAL AT CATHODE OF CRT
NORMAL
ABNORMAL
CHECK/REPLACE I717, I718
CHECK/REPLACE R731(2W,7.5K) D751 (μPC574J)
OK
NG
NORMAL
ABNORMAL
CHECK/REPLACE I717,I718
OK
NORMAL
CHECK/REPLACE Q501, Q511, Q521 (CRT BOARD)
OK
CHECK/REPLACE CRT
CHECK/REPLACE TUNER
NG
OK
CHECK/REPLACE I701
OK

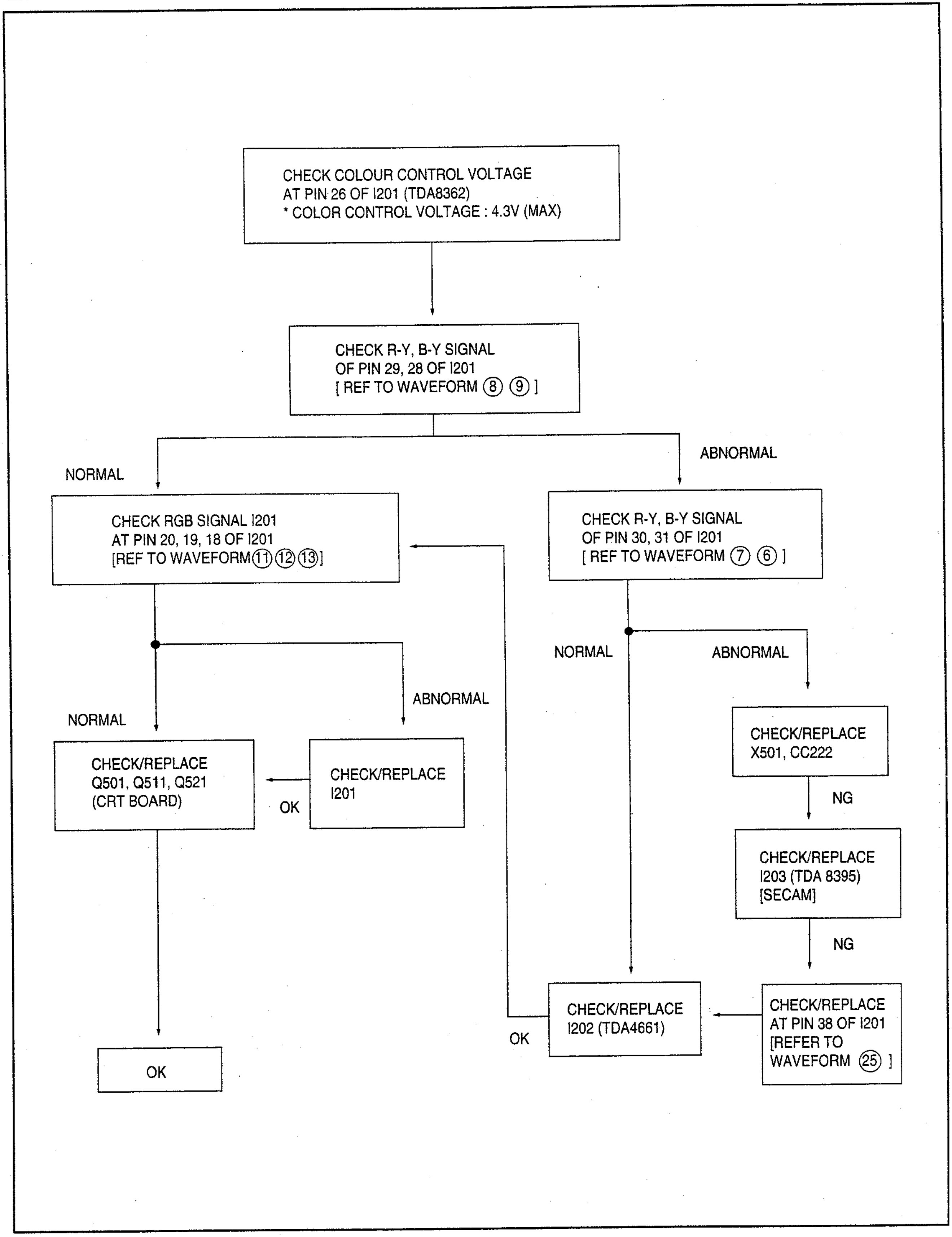
■AUTO SEARCH TROUBLE (CHANNEL SKIP)


CHECK THE SYNC-1 VOLTAGE AT PIN 20 OF I701
ABNORMAL
NORMAL
CHECK/REPLACE Q203, Q204
NORMAL
CHECK AFC VOLTAGE AT PIN 44 OF I201 (TDA8362)
* VOLTAGE SWING : 0 - 5V
NG
CHECK/REPLACE I201 (TDA8362)
OK
ABNORMAL
NORMAL
CHECK/REPLACE Q207 (KTC 3198Y)
CHECK/REPLACE I701
NG
CHECK/READJUST/REPLACE L201 (TRF - 1444P)
NG
CHECK/REPLACE I201 (TDA8362)
OK
OK

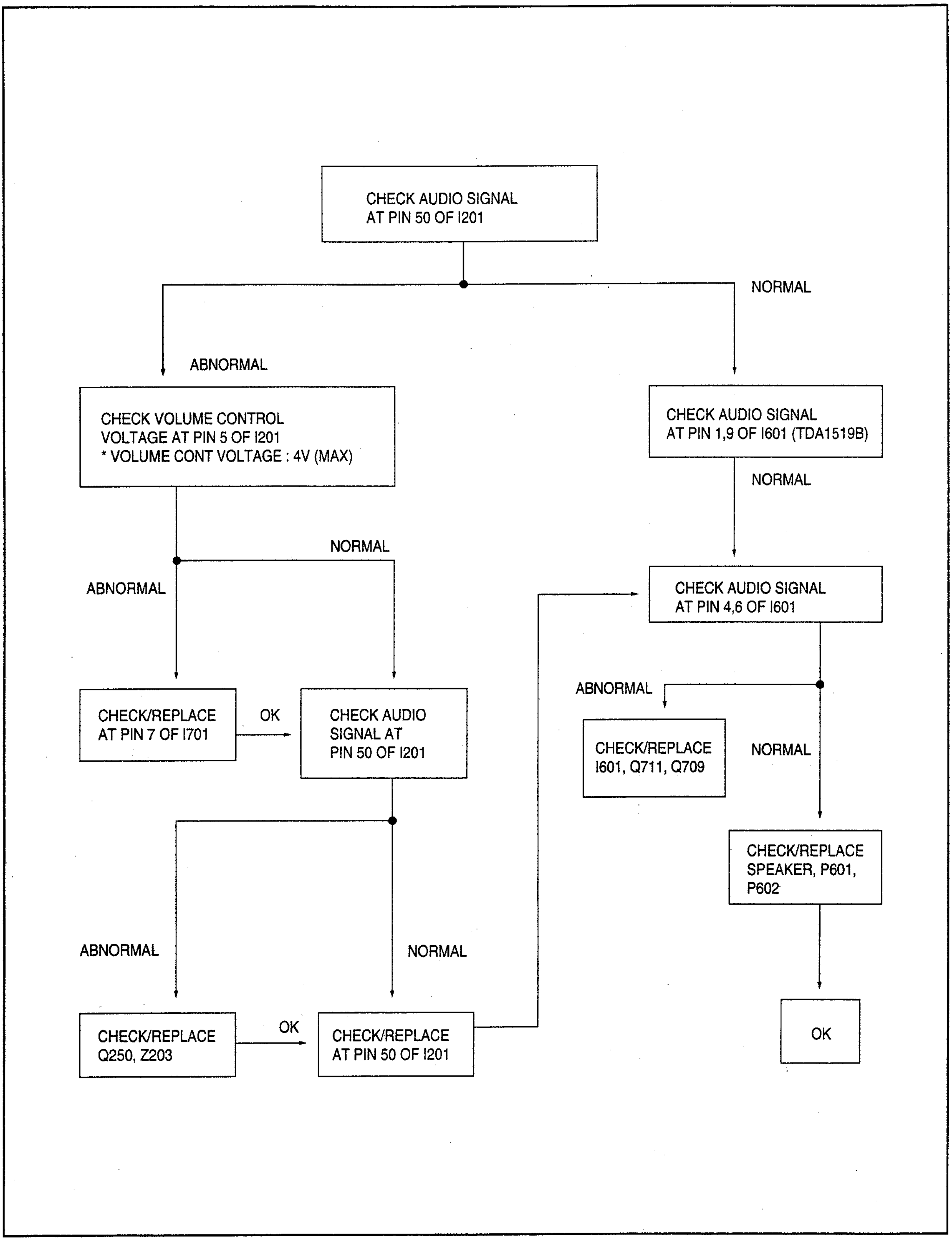
■NO VERTICAL SCANNING (ONE HORIZONTAL LINE ON SCREEN)


CHECK/REPLACE
P403 & D.Y.
NG
CHECK VERT. Vcc (+27V)
AT PIN 7 OF I301 (AN5515)
NORMAL
ABNORMAL
CHECK/REPLACE
AT PIN2, 4 OF I301
OK
CHECK/REPLACE
D301 (BYV95C)
R415 (1W,1)
NG
CHECK/REPLACE
AT PIN 41, 43 OF I201
OK

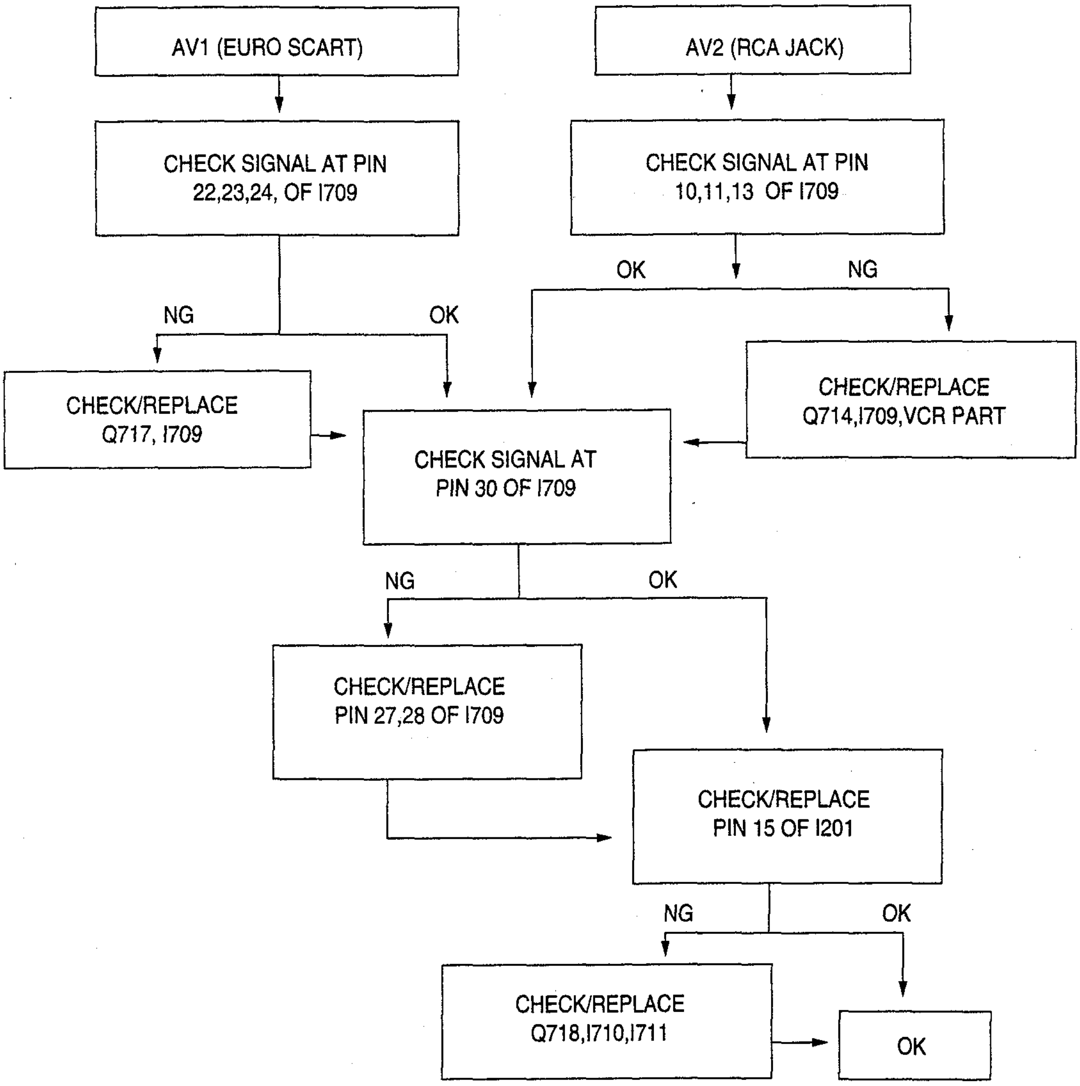
■NO COLOUR


CHECK COLOUR CONTROL VOLTAGE
AT PIN 26 OF I201 (TDA8362)
* COLOR CONTROL VOLTAGE : 4.3V (MAX)
CHECK R-Y, B-Y SIGNAL
OF PIN 29, 28 OF I201
[REF TO WAVEFORM ⑧ ⑨]
NORMAL
ABNORMAL
CHECK RGB SIGNAL I201
AT PIN 20, 19, 18 OF I201
[REF TO WAVEFORM⑪⑫⑬]
CHECK R-Y, B-Y SIGNAL
OF PIN 30, 31 OF I201
[REF TO WAVEFORM ⑦ ⑥]
NORMAL
ABNORMAL
NORMAL
ABNORMAL
CHECK/REPLACE
X501, CC222
NG
CHECK/REPLACE
Q501, Q511, Q521
(CRT BOARD)
OK
CHECK/REPLACE
I201
CHECK/REPLACE
I203 (TDA 8395)
[SECAM]
NG
CHECK/REPLACE
I202 (TDA4661)
OK
CHECK/REPLACE
AT PIN 38 OF I201
[REFER TO
WAVEFORM ㉕]
OK

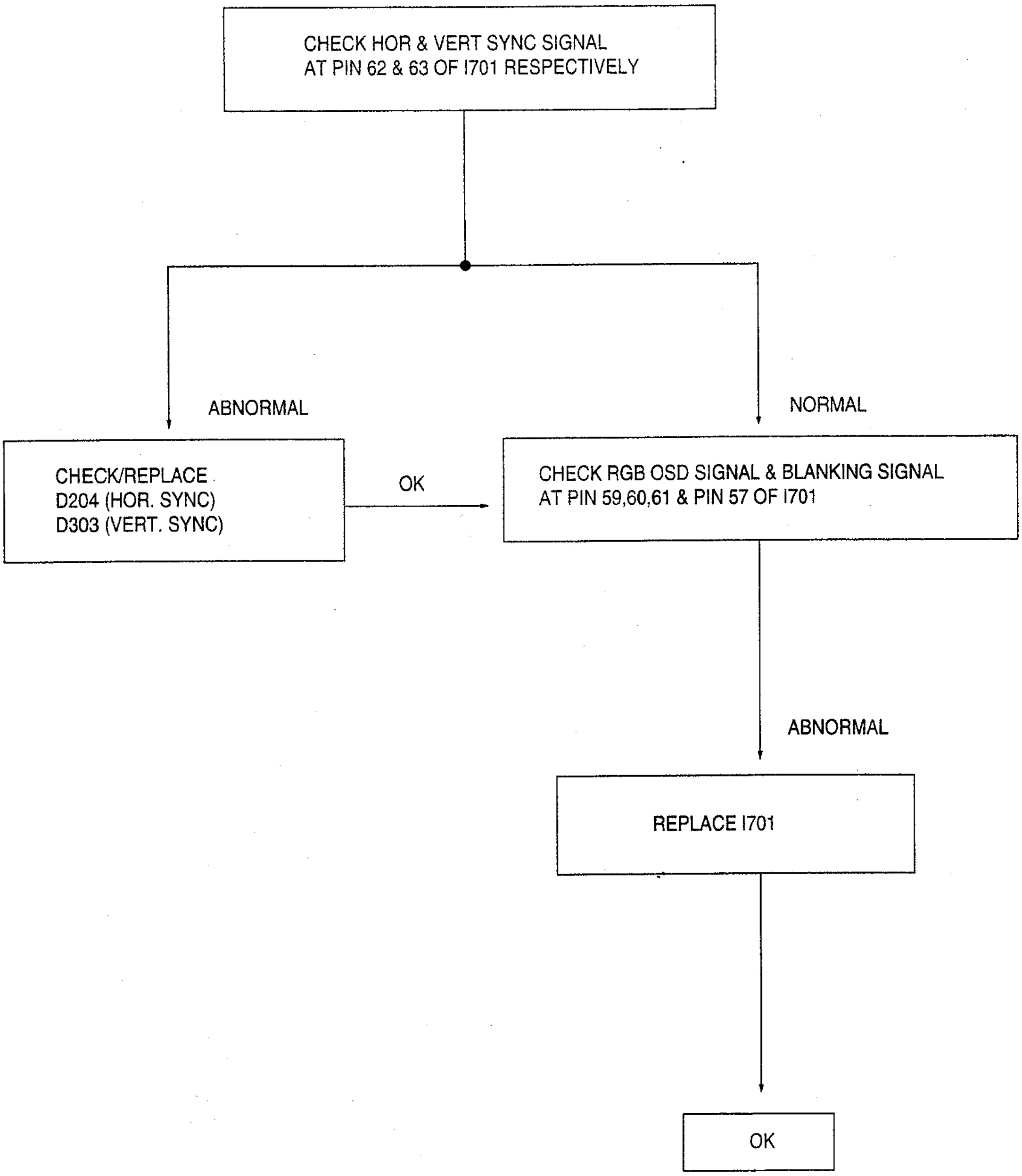
■NO SOUND (PICTURE OK)


CHECK AUDIO SIGNAL AT PIN 50 OF I201
NORMAL
ABNORMAL
CHECK VOLUME CONTROL VOLTAGE AT PIN 5 OF I201 * VOLUME CONT VOLTAGE : 4V (MAX)
CHECK AUDIO SIGNAL AT PIN 1,9 OF I601 (TDA1519B)
NORMAL
NORMAL
ABNORMAL
CHECK AUDIO SIGNAL AT PIN 4,6 OF I601
ABNORMAL
CHECK/REPLACE AT PIN 7 OF I701
OK
CHECK AUDIO SIGNAL AT PIN 50 OF I201
CHECK/REPLACE I601, Q711, Q709
NORMAL
CHECK/REPLACE SPEAKER, P601, P602
ABNORMAL
NORMAL
CHECK/REPLACE Q250, Z203
OK
CHECK/REPLACE AT PIN 50 OF I201
OK

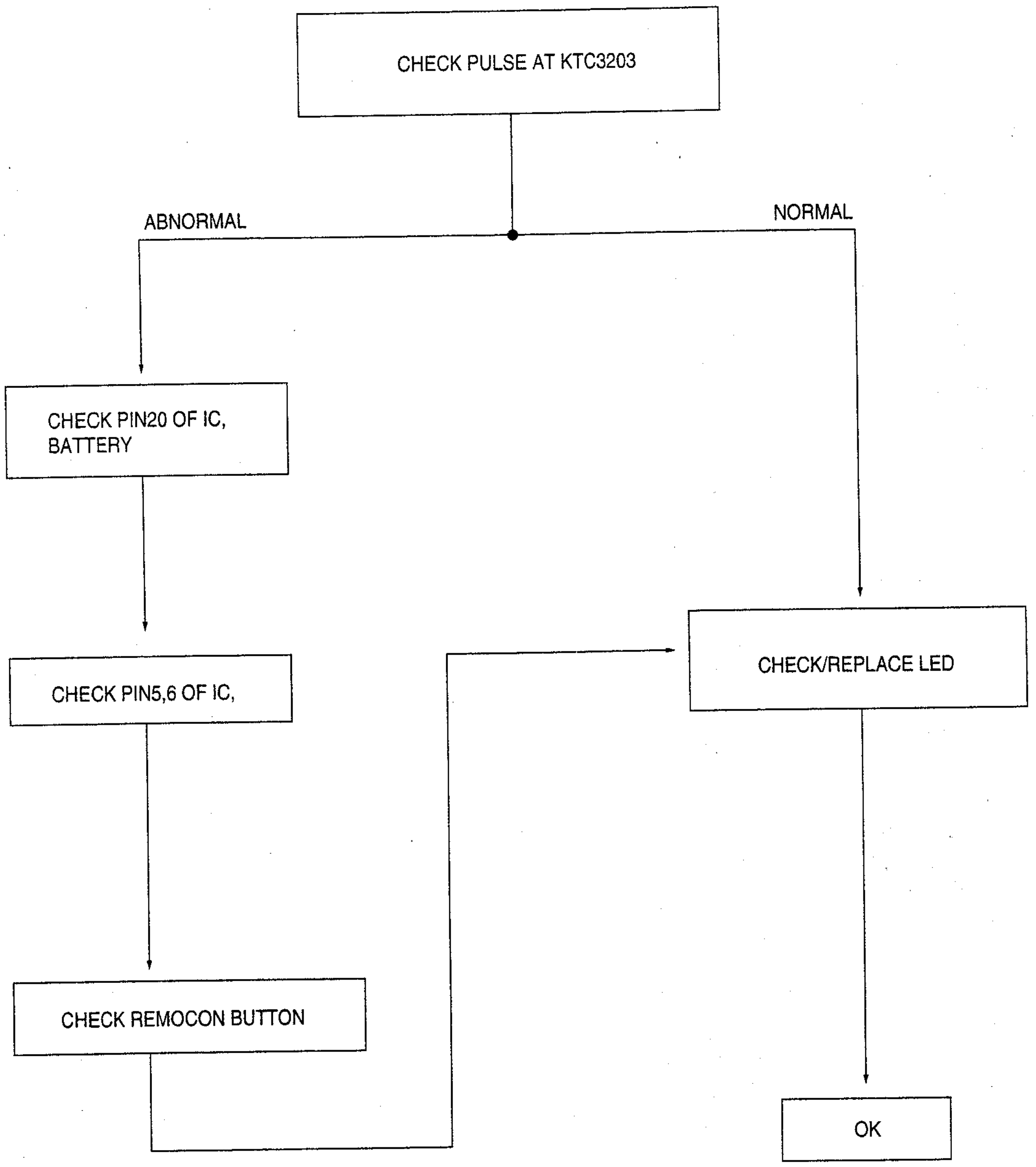
■NO EXTERNAL AV


AV1 (EURO SCART)
AV2 (RCA JACK)
CHECK SIGNAL AT PIN 22,23,24, OF I709
CHECK SIGNAL AT PIN 10,11,13 OF I709
NG
OK
OK
NG
CHECK/REPLACE Q717, I709
CHECK/REPLACE Q714,I709,VCR PART
CHECK SIGNAL AT PIN 30 OF I709
NG
OK
CHECK/REPLACE PIN 27,28 OF I709
CHECK/REPLACE PIN 15 OF I201
NG
OK
CHECK/REPLACE Q718,I710,I711
OK

■NO ON-SCREEN DISPLAY


CHECK HOR & VERT SYNC SIGNAL
AT PIN 62 & 63 OF I701 RESPECTIVELY
ABNORMAL
NORMAL
CHECK/REPLACE
D204 (HOR. SYNC)
D303 (VERT. SYNC)
OK
CHECK RGB OSD SIGNAL & BLANKING SIGNAL
AT PIN 59,60,61 & PIN 57 OF I701
ABNORMAL
REPLACE I701
OK

■REMOTE CONTROL TROUBLE (LOCAL CONTROL OK)


CHECK PULSE AT KTC3203
ABNORMAL
NORMAL
CHECK PIN20 OF IC,
BATTERY
CHECK PIN5,6 OF IC,
CHECK REMOCON BUTTON
CHECK/REPLACE LED
OK

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
ZZ100	48B2730C03	TRANSMITTER REMOCON	R-30C03	PA
ZZ100	48B2730C04	TRANSMITTER REMOCON	R-30C04	FA
ZZ100	48B2730C19	TRANSMITTER REMOCON	R-30C19	LA
ZZ110	PTACPWC796	ACCESSORY AS	DVT-21F4LA	
10	47P7500001	BATTERY	AAM 1.5V	
20	48586G7719	MANUAL INSTRUCTION	DVT-20F4PA/21F4PA	PA
20	48586G7719	MANUAL INSTRUCTION	DVT-20F4FA/21F4FA	FA
20	48586G7719	MANUAL INSTRUCTION	DVT-20F4LA/21F4LA	LA
M821	4858213800	BAG POLY	PE FILM T0.06X250X350	
ZZ120	PTBCSHC796	COVER BACK AS	DVT-21F4LA	
M211	4852139500	COVER BACK	FR HIPS BK	
M541	4855415800	SPEC PLATE	150ART P/E FILM (C/TV)	
M781	4857817610	CLOTH BLACK	FELT T0.7 L=300	
ZZ130	PTPKCPC796	PACKING AS	DVT-21F4LA	
M641	6520010100	STAPLE PIN	18M/MJ D O	
M801	4858038011	BOX	SW-4	
M811	4858170900	PAD	EPS	
M821	4858215000	BAG P.E	FOAM LEX 0.5T*1200*1150	
ZZ131	58G0000086	COIL DEGAUSSING	DC-2050	20”
ZZ131	58G0000074	COIL DEGAUSSING	DC-2070	21”
ZZ132	48519A5110	CRT GROUND AS	2001S-1015-1P	20”
ZZ132	48519A5310	CRT GROUND AS	2101S-1015-1P	21”
ZZ140	PTCACAC796	CABINET AS	DVT-21F4LA	
M161A	7128300811	SCREW TAPPING	T2S WAS 3X8 MFZN	
M191	4851924650	BUTTON CTRL AS	DVT-21F4	
M192	4851924305	HANDLE L AS	48526133+48526134 BK002B	
M193	4851924205	HANDLE R AS	48526133+48526134 BK002B	
M201A	7122401411	SCREW TAPPING	T2S TRS 4X14 MFZN	
M201B	7122400811	SCREW TAPPING	T2S TRS 4X8 MFZN	
M201C	7122401411	SCREW TAPPING	T2S TRS 4X14 MFZN	
M211A	7122401612	SCREW TAPPING	T2S TRS 4X16 MFZN BK	
M211B	7122401612	SCREW TAPPING	T2S TRS 4X16 MFZN BK	
M211C	7122401612	SCREW TAPPING	T2S TRS 4X16 MFZN BK	
M211D	7122401612	SCREW TAPPING	T2S TRS 4X16 MFZN BK	
M231	4852319801	PANEL CTRL	ABS BK	
M351	4853525500	HOLDER CORD	FR HIPS BK	
M371	4853744300	RETA FRAME	SECCT1.0	
M461	97P4602700	CLAMP CORD	NYLON 66 BLK 5280N	
M481	4854842501	BUTTON POWER	ABS BK	
M491	4854926501	BUTTON A	ABS BK	
M491A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
M492	4854926601	BUTTON CH	ABS BK	
M492A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
M551	4855522600	DECO SENSOR	PMMA	
M551A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
M561	4855615900	MARK BRAND	A1050P-H24 T0.4	
M671	4856716001	SPRING	SWPA PIE0.5	
M681	4856812001	TIE CABLE	NYLON66 DA100	
M831	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
SP01A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
SP02A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
V901	PTRTPWC004	CRT AS	PAL 21" ITC CRT AS N	
V01	58D0000063	COIL DY	ODY-F2102	
V02	48A96R004-	RUBBER WEDGE	HMR 28 SR (I0X54)	
V03	4850PM001-	MAGNET CP	NY-225 (MINI NECK)	
V04	2TG00025-	TAPE GLASS	W25	
V05	2224050033	BOND SILICON	RTV 252	
V901	48A96321P1	CRT BARE	A51JSW90X	
V901A	4856215402	WASHER RUBBER	CR	
V901B	4856013301	SCREW CRT FIXING AS	L=140MM	
V901Z	4856013303	SCREW CRT FIXING AS	L=240MM	
ZZ200	PTFMSJC796	MASK FRONT AS	DVT-21F4LA	
M201	4852052601	MASK FRONT	HIPS BK	
M251	4852528300	GRILL R	PS SHEET T0.54	
M252	4852528400	GRILL SPKR L	PS SHEET T0.54	
M331	4853311601	RETAINER BACK	HIPS NC	
ZZ204	PTPESWC796	PCB POWER SW AS	DVT-21F4LA	
A001	4859809611	PCB POWER	233X196 S	
P803	4859242220	CONN WAFER	YFW800-02	
P804	4859242220	CONN WAFER	YFW800-02	
PA804	4850702S17	CONN AS	YFH800-02+YDT235+USW=200	
PWC1	4859905110	CORD POWER AS	CW3222/240V 5A+HOUS=2200	PA
PWC1	4859903511	CORD POWER	CW4232 H03VVH2-F=2250	FA/LA
SW801	5S40202142	SW PUSH	ME-7 (70063-072)	
ZZ210	PTSPPWC796	SPEAKER AS	DVT-21F4LA	
PA601	4850703S13	CONN AS	YH025-03+YST025+USW=500	
PA602	4850703S46	CONN AS	YH025-03+YST025+USW=400	
SP01	4858312510	SPEAKER	SP-33129A02	
SP02	4858312510	SPEAKER	SP-33129A02	
ZZ290	PTMPMSC796	PCB MAIN MANUAL AS	DVT-21F4LA	
C200	4850L00200	TRIMMER	TZ03R 300B (30PF)	LA
C407	CMYH3C752J	C MYLAR	1.6KV BUP 7500PF J	20"
C407	CMYH3C822J	C MYLAR	1.6KV BUP 8200PF J	21"
C409	CMYE2D474J	C MYLAR	200V 0.47MF J (PL)	20"
C409	CMYE2D334J	C MYLAR	200V 0.33MF J (PL)	21"
C732	CCXR3A102K	C CERA	HIKR 1KV 1000PF K 125C	
C805	CEYN2G151P	C ELECTRO	400V LHS 150MF (22X40)	
C813	CMYH3C152J	C MYLAR	1.6KV 1500PF J (BUP)	
C815	CH1FFE472M	C CERA AC	DE1910E ACT4K-KD 472M	
C820	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVSNDF/SV)+Q/O	
C821	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVSNDF/SV)+Q/0	
D110	D1S2186--	DIODE	1S2186	LA
D111	D1S2186--	DIODE	1S2186	LA
D206	D1S2186--	DIODE	1S2186	LA
D402	DBYW95C--	DIODE	BYW95C (TAPPING)	
D713	DBYW95C--	DIODE	BYW95C (TAPPING)	
D730	DBYW95C--	DIODE	BYW95C (TAPPING)	
D751	1UPC574J-	IC	UPC574J	
D801	DPBS408GU-	DIODE	PBS408GU-CA	
D905	D1S2186--	DIODE	1S2186	LA

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
D906	D1S2186--	DIODE	1S2186	LA
F801	5FSCB4022R	FUSE CERA	SEMKO F4AH 4A 250V MF51	
I201	1TDA8362B-	IC	TDA8362B	PA/FA
I201	1TDA8362-	IC	TDA8362	LA
I202	1TDA4661-	IC	TDA4661	
I203	1TDA8395-	IC	TDA8395	LA
I301	1AN5515--	IC	AN5515	
I301A	4857024601	HEAT SINK	AL EX	
I301B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I301C	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING	
I301D	7128261011	SCREW TAPPING	T2S WAS 2.6X10 MFZN	
I601	1TDA1519B-	IC AMP	TDA1519B	
I601A	4857025400	HEAT SINK	A1050P-H24 T2.0	
I601B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I601C	4856215200	WASHER	SPCC	
I701	1M37206231	IC MICOM	M37206MC-231SP	PA
I701	1M37206233	IC MICOM	M37206MC-233SP	FA/LA
I702	1CAT24C08P	IC	CAT24C08P	
I703	1SDA5648-	IC DECODER	SDA5648	FA/LA
I705	1TC4052BP-	IC	TC4052BP	
I708	1MC14053BC	IC CMOS	MC14053BCP	
I709	1SN76861NJ	IC	SN76861NJ-12	
I710	1CF70200-	IC	CF70200NW	
I711	1CF72306-	IC	CF72306	
I712	1MN1380L-	IC COMPARATOR(RESET)	MN1380-L(RESET IC)	
I717	1KA78R12-	IC REGULATOR	KA78R12	
I717A	4857024900	HEAT SINK	AL EX	
I717B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I718	1PQ05RF11-	IC REGULATOR	PQ05RF11	
I718A	4857024900	HEAT SINK	AL EX	
I718B	7121300811	SCREW TAPPING	T2S PAN 3X8 MFZN	
I718C	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING	
I718D	7128261011	SCREW TAPPING	T2S WAS 2.6X10 MFZN	
I719	1L7812CV-	IC REGULATOR	L7812CV	
I719A	4857026900	HEAT SINK	AL EX	
I719B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I720	1TDA9830-	IC SWITCH	TDA9830	LA
I722	1KA7808--	IC REGULATOR	KA7808	
I729	1K1A7806P1	IC REGULATOR	KIA7806PI	
I801	1TDA4601-	IC	TDA4601	
I801A	4857025401	HEAT SINK	A1050P-H24 T2	
I801B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I801C	4856215200	WASHER	SPCC	
I901	1TDA9800-	IC	TDA9800	PA/FA
I901	1TDA9802-	IC	TDA9802	LA
I902	1TDA9830-	IC SWITCH	TDA9830	LA
JP01	4859200401	SOCKET RGB	SR-21A1 (ANGLE TYPE)	
JP02	4859004350	JACK PHONE PLUG AS	YSC-CABLE70	
L110	58C9780027	COIL CHOKE	TRF-1201B (0.97 UH)	
L201	58B38R9061	COIL PIF	TRF-1444P	
L402	58H0000016	COIL H-LINEARITY	L-102(102UH)	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
L404	58C9430599	COIL CHOKE	AZ-9004Y(94MH)	
L721	58C9430599	COIL CHOKE	AZ-9004Y(94MH)	
L902	58B0000S88	COIL PIF	TRF-7780A (STICK)	
LF801	5PLF3544B-	FILTER LINE	LF-3544B	
LF802	5PLF303--	FILTER LINE	LF-303	
M361	4853627501	TERMINAL ANT	FR HIPS BK	
M361A	7122401212	SCREW TAPPING	T2S TRS 4X12 MFZN BLACK	
M381	4853811010	FRAME MAIN PCB	FR HIPS (NON-DECA)	
M381A	7128301011	SCREW TAPPING	T2S WAS 3X10 MFZN	
M392	4853947500	BRKT CHASSI	SECC T1.5	
M392A	7122401412	SCREW TAPPING	T2S TRS 4X14 MFZN BK	
M393	4853947501	BRKT CHASSI	SECC T1.5	
M393A	7122401412	SCREW TAPPING	T2S TRS 4X14 MFZN BK	
M682	4856812001	TIE CABLE	NYLON66 DA100	
M685	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING	
M685A	7122400811	SCREW TAPPING	T2S TRS 4X8 MFZN	
M686	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING	
M686A	7122400811	SCREW TAPPING	T2S TRS 4X8 MFZN	
M721	4857231950	SHIELD PLATE	SECC T1.0	
M721A	7122401011	SCREW TAPPING	T2S TRS 4X10 MFZN	
M723	4857230600	SHIELD CASE	SPTH-C T0.3	
P403	4859240120	CONN WAFER	YFW500-06	
P702A	4850K00200	CORE FERRITE	0R34.8X12-21H	
PA701	4850715V01	CONN AS	YH025-15+YST025+UAW=500	
PA702	4850712V05	CONN AS	YH025-12+YST025+USW=700	
PT01	4851900130	GROUND TUNER AS	DS-W1015-S	FA/LA
Q401	TKSD5072TU	TR	KSD5072-TU	
Q401A	4857024500	HEAT SINK	AL EX B/K	
Q401B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
Q401C	4856215201	WASHER	SPCC	
Q801	TKSD5072TU	TR	KSD5072-TU	
Q801A	4857026500	HEAT SINK	AL EX	
Q801B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
R801	DJ5034D180	POSISTOR	J503P54D180M290	20”
R801	DJ140M290L	POSISTOR	J503P53D140M290L	21”
R802	DB59346P20	POSISTOR	B59346-A1502-P20	
R803	RX10B339JN	R CEMENT	10W 3.3 OHM J BENCH 4P	
R816	RX05B360JN	R CEMENT	5W 36 OHM J BENCH 4P	
RLY1	5SC0101328	SW RELAY	SDT-SS-112DM	
SW01	NS80103TLE	SW LEVER	TLE1X3	
T401	50D0000022	TRANS DRIVE	HD-15D	
T402	50H0000120	FBT	DCF-2217J	20”
T402	50H0000121	FBT	DCF-2217L	21”
T801	50M4445A1-	TRANS SMPS	TSM-4445A1	
U001	4859714730	TUNER VARACTOR	FAL2163/84 WITH RCA PHONO	PA
U001	4859714930	TUNER VARACTOR	FAL2463/84 WITH RCA PHONO	FA/LA
U002	4859714830	TUNER VARACTOR	FL2171/84A	PA
U002	4859715030	TUNER VARACTOR	FL2471/84	FA/LA
X201	5XE4R4336E	CRYSTAL QUARTZ	HC-49/U 4.433619MHZ 30PPM	
X701	5XE8R0000E	CRYSTAL QUARTZ	HC-49/U 8.000000MHZ 30PPM	
X702	5XE13R875E	CRYSTAL QUARTZ	HC-49/U 13.87500MHZ 30PPM	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
X703	5XYR03276C	CRYSTAL QUARTZ	S0-38 32.768000KHZ 20PPM	
Z101	5PJ1951M-	FILTER SAW	J1951M	PA
Z101	5PG1966M-	FILTER SAW	G1966M	FA/LA
Z102	5PJ1951M-	FILTER SAW	J1951M	PA
Z102	5PG1966M-	FILTER SAW	G1966M	FA/LA
Z103	5PL9461M-	FILTER SAW	L 9461-M	LA
Z104	5PL9461M-	FILTER SAW	L 9461-M	LA
Z105	5PMKT40MA-	FILTER CERA	MKT40MA100P	FA/LA
Z201	5PTPS60MB-	FILTER CERA	TPS-6.0MB	PA
Z201	5PTPS55MB-	FILTER CERA	TPS-5.5MB	FA/LA
Z901	5PTPS60MB-	FILTER CERA	TPS-6.0MB	PA
Z901	5PTPS55MB-	FILTER CERA	TPS-5.5MB	FA/LA
ZZ200	PTMPJ2C796	PCB CHIP MOUNT B AS	DVT-21F4LA	
CC101	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC102	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	LA
CC103	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC104	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC111	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC120	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	LA
CC125	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC201	HCBK222KCA	C CHIP CERA	50V X7R 2200PF K 2012	LA
CC202	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	LA
CC203	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC204	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC205	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	LA
CC208	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	
CC210	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC211	HCBK392KCA	C CHIP CERA	50V X7R 3900PF K 2012	
CC212	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC213	HCBK222KCA	C CHIP CERA	50V X7R 2200PF K 2012	
CC214	HCBK222KCA	C CHIP CERA	50V X7R 2200PF K 2012	
CC216	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC217	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC218	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CC219	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CC220	HCQK181JCA	C CHIP CERA	50V CH 180PF J 2012	
CC221	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CC222	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC223	HCBK222KCA	C CHIP CERA	50V X7R 2200PF K 2012	
CC230	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC231	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC232	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC233	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC234	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	LA
CC235	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012	
CC236	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC237	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC238	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC239	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012	
CC240	HCQK560JCA	C CHIP CERA	50V CH 56PF J 2012	
CC241	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CC242	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC243	HCQK130JCA	C CHIP CERA	50V CH 13PF J 2012	
CC244	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC245	HCBK392KCA	C CHIP CERA	50V X7R 3900PF K 2012	
CC246	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC247	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC248	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC250	HCQK181JCA	C CHIP CERA	50V CH 180PF J 2012	
CC251	HCQK181JCA	C CHIP CERA	50V CH 180PF J 2012	
CC256	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC260	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC301	HCBK152KCA	C CHIP CERA	50V X7R 1500PF K 2012	
CC302	HCQK471JCA	C CHIP CERA	50V CH 470PF J 2012	
CC608	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	
CC609	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC610	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC611	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	
CC612	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC700	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC701	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC702	HCQK150JCA	C CHIP CERA	50V CH 15PF J 2012	
CC703	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC704	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC705	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC706	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC707	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC708	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC709	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC710	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC711	HCQK120JCA	C CHIP CERA	50V CH 12PF J 2012	
CC712	HCQK110JCA	C CHIP CERA	50V CH 11PF J 2012	
CC713	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC714	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC715	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC716	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC717	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC718	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	
CC719	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC720	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC722	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC723	HCBK333KCA	C CHIP CERA	50V X7R 0.033MF K 2012	
CC724	HCBK222KCA	C CHIP CERA	50V X7R 2200PF K 2012	
CC725	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	
CC726	HCQK151JCA	C CHIP CERA	50V CH 150PF J 2012	
CC729	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC730	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC731	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC732	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC735	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC736	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC737	HCQK150JCA	C CHIP CERA	50V CH 15PF J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
CC738	HCQK150JCA	C CHIP CERA	50V CH 15PF J 2012	
CC739	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC740	HCQK271JCA	C CHIP CERA	50V CH 270PF J 2012	
CC746	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC749	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC750	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	LA
CC755	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC756	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC759	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	LA
CC760	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC761	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC762	HCQK130JCA	C CHIP CERA	50V CH 13PF J 2012	
CC764	HCQK300JCA	C CHIP CERA	50V CH 30PF J 2012	
CC765	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC768	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC771	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC772	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC777	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC778	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012	
CC779	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	
CC781	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC782	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC798	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012	
CC799	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC801	HCQK221JCA	C CHIP CERA	50V CH 220PF J 2012	
CC802	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC803	HCBK682KCA	C CHIP CERA	50V X7R 6800PF K 2012	
CC901	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC902	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC903	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC904	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC905	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	
CC906	HCQK101JCA	C CHIP CERA	50V CH 100PF J 2012	LA
CC907	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	
CC908	HCBK333KCA	C CHIP CERA	50V X7R 0.033MF K 2012	
CC909	HCQK809DCA	C CHIP CERA	50V CH 8PF D 2012	PA/FA
CC910	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012	
CC911	HCBK333KCA	C CHIP CERA	50V X7R 0.033MF K 2012	
CC912	HCBK223KCA	C CHIP CERA	50V X7R 0.022MF K 2012	
CC913	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012	
CC914	HCQK100DCA	C CHIP CERA	50V CH 10PF D 2012	
CC915	HCBH104KCA	C CHIP CERA	25V X7R 0.1MF K 2012	LA
CC916	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	LA
CC917	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	LA
CC918	HCBH224KCA	C CHIP CERA	25V X7R 0.22MF K 2012	LA
CC920	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	LA
CC921	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012	LA
RC02	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC03	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC04	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC06	HRFT000-CA	R CHIP	1/10 0 OHM 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC07	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC08	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC09	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC10	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC101	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	
RC102	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC103	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC105	HRFT183JCA	R CHIP	1/10 18K OHM J 2012	
RC106	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	LA
RC11	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC111	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	LA
RC112	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC113	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC114	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC115	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	LA
RC116	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	LA
RC12	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC120	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	LA
RC122	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC123	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	LA
RC125	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC14	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC15	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC16	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC17	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC18	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC19	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC20	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC200	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC201	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC202	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC203	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC204	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	LA
RC205	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC206	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC207	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC208	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	LA
RC209	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC210	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC211	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC212	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC213	HRFT393JCA	R CHIP	1/10 39K OHM J 2012	LA
RC214	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC215	HRFT123JCA	R CHIP	1/10 12K OHM J 2012	
RC216	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC217	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC218	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC219	HRFT304JCA	R CHIP	1/10 300K OHM J 2012	
RC22	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC220	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC221	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC222	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC223	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC224	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC227	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC228	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC229	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC23	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC233	HRFT824JCA	R CHIP	1/10 820K OHM J 2012	
RC24	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC240	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC241	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	
RC242	HRFT470JCA	R CHIP	1/10 47 OHM J 2012	
RC243	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC244	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC245	HRFT391JCA	R CHIP	1/10 390 OHM J 2012	
RC246	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	
RC247	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC248	HRFT270JCA	R CHIP	1/10 27 OHM J 2012	
RC249	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC25	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC252	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RC253	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC254	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC255	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC26	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC260	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC261	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC27	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC270	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC274	HRFT823JCA	R CHIP	1/10 82K OHM J 2012	
RC298	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC299	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	LA
RC30	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC301	HRFT514JCA	R CHIP	1/10 510K OHM J 2012	20”
RC301	HRFT224JCA	R CHIP	1/10 220K OHM J 2012	21”
RC302	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC303	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC304	HRFT821JCA	R CHIP	1/10 820 OHM J 2012	20”
RC304	HRFT681JCA	R CHIP	1/10 680 OHM J 2012	21”
RC305	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	20”
RC305	HRFT271JCA	R CHIP	1/10 270 OHM J 2012	21”
RC31	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC310	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC32	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC33	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC34	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC35	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC36	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC37	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC38	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC39	HRFT000-CA	R CHIP	1/10 0 OHM 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC40	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC41	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC42	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC43	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC44	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC45	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC46	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC47	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC48	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC49	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC50	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC51	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC53	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC54	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC615	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC617	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC700	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC701	HRFT470JCA	R CHIP	1/10 47 OHM J 2012	
RC702	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC703	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC704	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC705	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC706	HRFT273JCA	R CHIP	1/10 27K OHM J 2012	
RC708	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC709	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC710	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC711	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC712	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC714	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC715	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC716	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC717	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012	
RC718	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC719	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC720	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC721	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC722	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC723	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC724	HRFT432JCA	R CHIP	1/10 4.3K OHM J 2012	
RC726	HRFT473JCA	R CHIP	1/10 47K OHM J 2012	
RC727	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012	
RC729	HRFT151JCA	R CHIP	1/10 150 OHM J 2012	
RC730	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC731	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC732	HRFT201JCA	R CHIP	1/10 200 OHM J 2012	
RC733	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC734	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC735	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC736	HRFT201JCA	R CHIP	1/10 200 OHM J 2012	
RC737	HRFT201JCA	R CHIP	1/10 200 OHM J 2012	
RC738	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC739	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC740	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC741	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC742	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012	
RC743	HRFT106JCA	R CHIP	1/10 10M OHM J 2012	
RC744	HRFT163JCA	R CHIP	1/10 16K OHM J 2012	
RC745	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC747	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC749	HRFT161JCA	R CHIP	1/10 160 OHM J 2012	
RC750	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RC751	HRFT125JCA	R CHIP	1/10 1.2M OHM J 2012	
RC752	HRFT125JCA	R CHIP	1/10 1.2M OHM J 2012	
RC753	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC754	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC755	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC756	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC757	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC758	HRFT105JCA	R CHIP	1/10 1M OHM J 2012	
RC759	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC760	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC761	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC762	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC763	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC764	HRFT563JCA	R CHIP	1/10 56K OHM J 2012	
RC765	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC766	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC767	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC768	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC769	HRFT471JCA	R CHIP	1/10 470 OHM J 2012	
RC770	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC771	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC772	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012	
RC773	HRFT470JCA	R CHIP	1/10 47 OHM J 2012	
RC774	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC775	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	
RC776	HRFT163JCA	R CHIP	1/10 16K OHM J 2012	
RC777	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	
RC778	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC779	HRFT153JCA	R CHIP	1/10 15K OHM J 2012	
RC780	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC781	HRFT121JCA	R CHIP	1/10 120 OHM J 2012	
RC782	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC783	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC784	HRFT750JCA	R CHIP	1/10 75 OHM J 2012	
RC785	HRFT123JCA	R CHIP	1/10 12K OHM J 2012	
RC786	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC787	HRFT000-CA	R CHIP	1/10 0 OHM 2012	
RC789	HRFT151JCA	R CHIP	1/10 150 OHM J 2012	
RC790	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC791	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC792	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RC794	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RC795	HRFT751JCA	R CHIP	1/10 750 OHM J 2012	
RC796	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC797	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012	PA/FA
RC797	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	LA
RC798	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC799	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC901	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC902	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012	
RC903	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC904	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	
RC905	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC906	HRFT271JCA	R CHIP	1/10 270 OHM J 2012	
RC907	HRFT561JCA	R CHIP	1/10 560 OHM J 2012	
RC908	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC909	HRFT683JCA	R CHIP	1/10 68K OHM J 2012	LA
RC910	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC911	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	LA
RC912	HRFT101JCA	R CHIP	1/10 100 OHM J 2012	LA
RC913	HRFT432JCA	R CHIP	1/10 4.3K OHM J 2012	LA
RC914	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC915	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012	LA
RC916	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012	LA
RC917	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	LA
RC918	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	LA
RC919	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RC920	HRFT104JCA	R CHIP	1/10 100K OHM J 2012	LA
RC921	HRFT331JCA	R CHIP	1/10 330 OHM J 2012	LA
RC922	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012	
RC923	HRFT183JCA	R CHIP	1/10 18K OHM J 2012	
RC924	HRFT333JCA	R CHIP	1/10 33K OHM J 2012	
RC925	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	LA
RC926	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012	
RC927	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC928	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RC929	HRFT202JCA	R CHIP	1/10 2K OHM J 2012	
RC930	HRFT223JCA	R CHIP	1/10 22K OHM J 2012	
RCP02	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP03	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP04	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP05	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP06	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP07	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP08	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	FA/LA
RCP10	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP11	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP14	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP15	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP16	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP17	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	
RCP23	HRFT102JCA	R CHIP	1/10 1K OHM J 2012	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
RCP30	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
RCP31	HRFT103JCA	R CHIP	1/10 10K OHM J 2012	
ZZ200	PTMPJ0C796	PCB MAIN (RHU) AS	DVT-21F4LA	
C301	CEXF1V471C	C ELECTRO	35V RUS 470MF (10X20) TP	
C302	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
C307	CEXF1V221V	C ELECTRO	35V RSS 220MF (10X12.5)TP	
C408	CCXB3D221K	C CERA	2KV B 220PF K (T)	20”
C408	CCXB3D271K	C CERA	2KV B 270PF K (T)	21”
C410	CEXF2C330C	C ELECTRO	160V RUS 33MF (13X20) TP	
C411	CEXF2C330C	C ELECTRO	160V RUS 33MF (13X20) TP	
C601	CEXF1E102C	C ELECTRO	25V RUS 1000MF (13X20) TP	
C610	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C700	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP	
C702	CDXF0H104K	C SUPER	5.5V 0.1F F (TAPPING)	
C720	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C721	CEXF1E471C	C ELECTRO	25V RUS 470MF (10X16) TP	
C725	CEXF2C220C	C ELECTRO	160V RUS 22MF (10X20)TP	
C727	CEXF1E471C	C ELECTRO	25V RUS 470MF (10X16) TP	
C728	CEXF2C101C	C ELECTRO	160V RUS 100MF (16X25) TP	
C734	CEXF1E471C	C ELECTRO	25V RUS 470MF (10X16) TP	
C801	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
C802	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
C803	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
C804	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
ZZ200	PTMPJBC796	PCB MAIN M-10 AS	DVT-21F4LA	
C407A	4856310300	EYE LET	BSR T0.2 (R1.6)	
C407B	4856310300	EYE LET	BSR T0.2 (R1.6)	
C409A	4856310300	EYE LET	BSR T0.2 (R1.6)	
C409B	4856310300	EYE LET	BSR T0.2 (R1.6)	
C805A	4856310600	EYE LET	BSR T0.2 (R2.3)	
C805B	4856310600	EYE LET	BSR T0.2 (R2.3)	
L402A	4856310300	EYE LET	BSR T0.2 (R1.6)	
L402B	4856310300	EYE LET	BSR T0.2 (R1.6)	
L801A	4856310300	EYE LET	BSR T0.2 (R1.6)	
L801B	4856310300	EYE LET	BSR T0.2 (R1.6)	
L801C	4856310300	EYE LET	BSR T0.2 (R1.6)	
L801D	4856310300	EYE LET	BSR T0.2 (R1.6)	
P201	485923182S	CONN WAFER	YW025-05 (STICK)	
P211	485923162S	CONN WAFER	YW025-03 (STICK)	
P212	485923162S	CONN WAFER	YW025-03 (STICK)	
P401	485923162S	CONN WAFER	YW025-03 (STICK)	
P601	485923162S	CONN WAFER	YW025-03 (STICK)	
P602	485923162S	CONN WAFER	YW025-03 (STICK)	
P701	485923512S	CONN WAFER	YW025-08 (STICK)	
P702	485923512S	CONN WAFER	YW025-08 (STICK)	
P703	485923202S	CONN WAFER	YW025-07 (STICK)	
P704	485923172S	CONN WAFER	YW025-04 (STICK)	
P711	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P712	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P801A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P801B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
P802A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P802B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P805	485923162S	CONN WAFER	YW025-03 (STICK)	
R404	RS02Z512J-	R M-OXIDE FILM	2W 5.1K OHM J (TAPPING)	
R405	RS02Z512J-	R M-OXIDE FILM	2W 5.1K OHM J (TAPPING)	
R408	RS01Z102J-	R M-OXIDE FILM	1W 1K OHM J (TAPPING)	
R414	RF01Z629JA	R FUSIBLE	1W 6.2 OHM J A CURVE	
R415	RF01Z109J-	R FUSIBLE	1W 1 OHM J (TAPPING)	
R416	RS01Z109J-	R M-OXIDE FILM	1W 1 OHM J (TAPPING)	
R604	RS03Z399JS	R M-OXIDE FILM	3W 3.9 OHM J SMALL	
R710	RS01Z473J-	R M-OXIDE FILM	1W 47K OHM J (TAPPING)	
R725	RS01Z109J-	R M-OXIDE FILM	1W 1 OHM J (TAPPING)	
R731	RS02Z752J-	R M-OXIDE FILM	2W 7.5K OHM J (TAPPING)	
R803A	4856310600	EYE LET	BSR T0.2 (R2.3)	
R803B	4856310600	EYE LET	BSR T0.2 (R2.3)	
R805	RS03Z272JS	R M-OXIDE FILM	3W 2.7K OHM J SMALL	
R806	RS02Z101J-	R M-OXIDE FILM	2W 100 OHM J (TAPPING)	
R816A	4856310600	EYE LET	BSR T0.2 (R2.3)	
R816B	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402A	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402B	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402C	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402D	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402E	4856310600	EYE LET	BSR T0.2 (R2.3)	
T801A	4856310300	EYE LET	BSR T0.2 (R1.6)	
T801B	4856310300	EYE LET	BSR T0.2 (R1.6)	
T801C	4856310300	EYE LET	BSR T0.2 (R1.6)	
T801D	4856310300	EYE LET	BSR T0.2 (R1.6)	
T801E	4856310300	EYE LET	BSR T0.2 (R1.6)	
T801F	4856310300	EYE LET	BSR T0.2 (R1.6)	
ZZ200	PTMPJRC796	PCB MAIN RADIAL AS	DVT-21F4LA	
C101	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C102	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	PA/FA
C102	CEXF1E330V	C ELECTRO	25V RSS 33MF (5X11) TP	LA
C201	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C202	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C203	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C204	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C207	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C213	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C215	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C216	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C217	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C218	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C219	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C220	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C222	CMXM2A683J	C MYLAR	100V 0.068MF J TP	
C234	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C235	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C303	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C304	CCXB2H152K	C CERA	500V B 1500PF K (TAPPING)	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C305	CMXM2A333J	C MYLAR	100V 0.033MF J TP	
C306	CCXB2H471K	C CERA	500V B 470PF K (TAPPING)	
C333	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C401	CCXE2H472P	C CERA	500V E 4700PF P (TAPPING)	
C402	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)	
C403	CCXB2H471K	C CERA	500V B 470PF K (TAPPING)	
C405	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C406	CEXF2C109C	C ELECTRO	160V RUS 1MF (6.3X11)TP	
C412	CXSL2H470J	C CERA	500V SL 47PF J (TAPPING)	
C413	CMXM2A104J	C MYLAR	100V 0.1MF J TP	
C415	CCXB2H471K	C CERA	500V B 470PF K (TAPPING)	
C630	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C703	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C704	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C705	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C706	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C708	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C715	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C716	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C717	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C718	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C723	CEXF1E101C	C ELECTRO	25V RUS 100MF (6.3X11) TP	
C730	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C735	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C736	CEXF1E221C	C ELECTRO	25V RUS 220MF (8X11.5) TP	
C737	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C738	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C739	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C740	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C741	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C742	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C743	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C745	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C747	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C748	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C749	CCXB2H471K	C CERA	500V B 470PF K (TAPPING)	
C750	CEXF1H330V	C ELECTRO	50V RSS 33MF (6.3X11) TP	
C753	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
C755	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	LA
C756	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	LA
C758	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C759	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C760	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
C761	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C762	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP	
C763	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C764	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C765	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C767	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C770	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C775	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
C777	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
C778	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C799	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C806	CEXF1E101C	C ELECTRO	25V RUS 100MF (6.3X11) TP	
C807	CEXF1E101C	C ELECTRO	25V RUS 100MF (6.3X11) TP	
C808	CEXF1E101C	C ELECTRO	25V RUS 100MF (6.3X11) TP	
C809	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C810	CEXF1E221C	C ELECTRO	25V RUS 220MF (8X11.5) TP	
C812	CMXM2D682K	C MYLAR	200V 6800PF K TP	
C901	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	PA/FA
C901	CEXF1E330V	C ELECTRO	25V RSS 33MF (5X11) TP	LA
C902	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C903	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C904	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
C905	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	LA
C906	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	LA
C907	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	LA
C908	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	LA
F801A	4857415001	CLIP FUSE	PFC5000-0702	
F801B	4857415001	CLIP FUSE	PFC5000-0702	
F801C	4857621200	INSU COVER	PVC T1.0 94V-0	PA
I714	1K1A7042P-	IC SWITCH	KIA7042P(TAPPING)	
I730	1K1A7042P-	IC SWITCH	KIA7042P(TAPPING)	
L707	58C0000096	COIL CHOKE	610G0233(470K)	
L717	58C0000096	COIL CHOKE	610G0233(470K)	
Q110	TKTC3197-	TR	KTC 3197	LA
Q111	TKTC3198Y-	TR	KTC3198Y	LA
Q112	TKTC3198Y-	TR	KTC3198Y	LA
Q201	TKTC3198Y-	TR	KTC3198Y	LA
Q202	TKTA1266Y-	TR	KTA1266Y	LA
Q203	TKTA1266Y-	TR	KTA1266Y	
Q204	TKTC3198Y-	TR	KTC3198Y	
Q205	TKTC3198Y-	TR	KTC3198Y	LA
Q206	TKTA1266Y-	TR	KTA1266Y	LA
Q207	TKTC3198Y-	TR	KTC3198Y	
Q208	TKTC3198Y-	TR	KTC3198Y	
Q209	TKTC3198Y-	TR	KTC3198Y	LA
Q210	TKTC3198Y-	TR	KTC3198Y	
Q211	TKTC3198Y-	TR	KTC3198Y	
Q250	TKTC3198Y-	TR	KTC3198Y	
Q402	TKTC3207-	TR	KTC3207	
Q702	TKTC3198Y-	TR	KTC3198Y	
Q708	TKTA1266Y-	TR	KTA1266Y	
Q709	TKTC3198Y-	TR	KTC3198Y	
Q711	TKTA1266Y-	TR	KTA1266Y	
Q712	TKTC3198Y-	TR	KTC3198Y	
Q713	TKTC3198Y-	TR	KTC3198Y	
Q714	TKTA1266Y-	TR	KTA1266Y	
Q717	TKTA1266Y-	TR	KTA1266Y	
Q718	TKTC3198Y-	TR	KTC3198Y	
Q719	TKTC3198Y-	TR	KTC3198Y	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
Q720	TKTA1266Y-	TR	KTA1266Y	
Q723	TKTC3198Y-	TR	KTC3198Y	
Q724	TKTC3198Y-	TR	KTC3198Y	
Q726	TKTA1266Y-	TR	KTA1266Y	
Q729	TKTC3198Y-	TR	KTC3198Y	
Q730	TKTC3198Y-	TR	KTC3198Y	
Q731	TKTC3198Y-	TR	KTC3198Y	
Q733	TKTC3198Y-	TR	KTC3198Y	
Q735	TKTC3198Y-	TR	KTC3198Y	
Q736	TKTC3198Y-	TR	KTC3198Y	
Q740	TKTC3198Y-	TR	KTC3198Y	
Q741	TKTC3198Y-	TR	KTC3198Y	
Q901	TKTA1266Y-	TR	KTA1266Y	
Q902	TKTC3198Y-	TR	KTC3198Y	LA
Q903	TKTC3198Y-	TR	KTC3198Y	
Q904	TKTC3198Y-	TR	KTC3198Y	LA
Q905	TKTC3198Y-	TR	KTC3198Y	LA
Q906	TKTC3198Y-	TR	KTC3198Y	LA
Q907	TKTC3197-	TR	KTC 3197	LA
R010	RV5426103P	R SEMI FIXED	RH0638C 10K OHM B	
R011	RV5426473P	R SEMI FIXED	RH0638C 47K OHM B	
R012	RV5426103P	R SEMI FIXED	RH0638C 10K OHM B	
R013	RV5426473P	R SEMI FIXED	RH0638C 47K OHM B	
R030	RV5426103P	R SEMI FIXED	RH0638C 10K OHM B	
R080	RV5426472P	R SEMI FIXED	RH0638C 4.7K OHM B	
R090	RV5426223P	R SEMI FIXED	RH0638C 22K OHM	
R091	RV5426103P	R SEMI FIXED	RH0638C 10K OHM B	LA
Z203	5PTPS60MB-	FILTER CERA	TPS-6.0MB	PA
Z203	5PXFSH5R5M	FILTER CERA	SFSH5.5MCB-TF21 TAPPING	FA/LA
Z903	5PTPS60MB-	FILTER CERA	TPS-6.0MB	PA
Z903	5PXFSH5R5M	FILTER CERA	SFSH5.5MCB-TF21 TAPPING	FA/LA
ZZ200	PTMPJAC796	PCB MAIN AXIALAS	DVT-21F4LA	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
A001	4859800893	PCB MAIN	329X246 D1B	
D101	D1N4148--	DIODE	1N4148 (TAPPING)	
D102	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D201	D1N4148--	DIODE	1N4148 (TAPPING)	
D202	D1N4148--	DIODE	1N4148 (TAPPING)	
D203	D1N4148--	DIODE	1N4148 (TAPPING)	
D204	DUZ5R1BM-	DIODE ZENER	UZ-5.1BM	
D205	D1N4148--	DIODE	1N4148 (TAPPING)	
D207	D1N4148--	DIODE	1N4148 (TAPPING)	LA
D208	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D212	D1N4148--	DIODE	1N4148 (TAPPING)	
D301	DBYV95C--	DIODE	BYV95C (TAPPING)	
D302	D1N4003--	DIODE	1N4003 (TAPPING)	
D303	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D401	DBYV95C--	DIODE	BYV95C (TAPPING)	
D403	DBYV95C--	DIODE	BYV95C (TAPPING)	
D601	DBYV95C--	DIODE	BYV95C (TAPPING)	
D702	D1N4148--	DIODE	1N4148 (TAPPING)	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
D703	D1N4148--	DIODE	1N4148 (TAPPING)	
D704	D1N4148--	DIODE	1N4148 (TAPPING)	
D705	DUZ8R2BM-	DIODE ZENER	UZ-8.2BM	
D708	D1N4148--	DIODE	1N4148 (TAPPING)	
D709	D1N4148--	DIODE	1N4148 (TAPPING)	
D710	D1N4148--	DIODE	1N4148 (TAPPING)	
D711	D1N4002--	DIODE	1N4002 (TAPPING)	
D712	DBYV95C--	DIODE	BYV95C (TAPPING)	
D714	DBYV95C--	DIODE	BYV95C (TAPPING)	
D715	DUZ13BM--	DIODE ZENER	DZ-13BM	
D716	D1N4148--	DIODE	1N4148 (TAPPING)	
D717	D1N4148--	DIODE	1N4148 (TAPPING)	
D718	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D719	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D720	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D721	D1N4148--	DIODE	1N4148 (TAPPING)	
D722	D1N4002--	DIODE	1N4002 (TAPPING)	
D723	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D724	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D725	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D726	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D727	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D728	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D729	DUZ6R2BM-	DIODE ZENER	UZ-6.2BM	
D731	DBYV95C--	DIODE	BYV95C (TAPPING)	
D740	D1N4148--	DIODE	1N4148 (TAPPING)	
D750	DUZ13BM--	DIODE ZENER	DZ-13BM	
D752	D1N4148--	DIODE	1N4148 (TAPPING)	
D753	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D754	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D755	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D756	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D757	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D758	DUZ5R6BM-	DIODE ZENER	UZ-5.6BM(TAPPING)	
D802	D1N4002--	DIODE	1N4002 (TAPPING)	
D803	DBYV95C--	DIODE	BYV95C (TAPPING)	
D804	DBYV95C--	DIODE	BYV95C (TAPPING)	
D901	D1N4148--	DIODE	1N4148 (TAPPING)	
D902	DBB909A--	DIODE	BB909A	LA
D903	DUZ5R1BM-	DIODE ZENER	UZ-5.1BM	LA
D904	DUZ5R1BM-	DIODE ZENER	UZ-5.1BM	LA
J001	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J002	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J003	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J004	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J005	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J008	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J009	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J010	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J011	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J012	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J013	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J015	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J016	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J017	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J018	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J019	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J020	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J021	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J022	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J023	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J025	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J026	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J027	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J028	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J029	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J030	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J031	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J033	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J034	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J035	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J036	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J037	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J038	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J039	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J040	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J041	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J042	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J043	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J044	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J046	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J047	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J048	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J049	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J050	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J051	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J053	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J054	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J055	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J056	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J058	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J060	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J061	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	LA
J062	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	LA
J063	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J064	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J065	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J066	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J067	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J068	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J069	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J070	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J071	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J072	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J073	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J075	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J076	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J077	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J078	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J079	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J080	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J081	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J082	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J083	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J084	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J085	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J086	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J087	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J088	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J089	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J090	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J092	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J093	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J094	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J096	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J098	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J099	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J100	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J102	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J104	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J106	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J107	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J108	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J109	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J110	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J112	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J113	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J114	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J115	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J116	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J117	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J118	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J119	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J120	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J121	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J122	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J123	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J124	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J125	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J126	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J127	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J128	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J129	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J130	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J132	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J133	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J134	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J135	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J136	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J137	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J139	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J140	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J141	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J142	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J143	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J144	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J145	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J146	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J148	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J149	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J150	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J151	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J153	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J154	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J155	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J156	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J157	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J158	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J160	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J161	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J162	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J163	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J164	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J165	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J167	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J170	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J172	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J173	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J177	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J179	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J183	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J184	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J187	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J192	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J193	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J194	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J195	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J196	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J197	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J198	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J200	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J201	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J202	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J203	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J206	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J207	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J208	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J209	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J210	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J211	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J212	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J213	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J214	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J218	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J221	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J222	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J223	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J225	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J226	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J227	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J229	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J234	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J235	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J236	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J237	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J238	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J239	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J240	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J241	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J242	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J243	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J247	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J248	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J250	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J251	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J252	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J253	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J255	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J256	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J257	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J260	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J262	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J263	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J264	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J266	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J267	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J268	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J269	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J270	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J271	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J272	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J273	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J274	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J275	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J279	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J281	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J282	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J283	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J284	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J285	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J287	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J288	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J291	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J292	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J293	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J294	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J297	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J298	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J299	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J300	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J301	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J302	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J303	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J306	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	PA/FA
J307	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J308	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J310	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J311	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J312	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J313	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J315	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J316	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J318	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J319	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J321	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J322	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J323	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J325	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J326	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J327	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J328	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J329	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J330	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J335	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J342	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	PA/FA
J344	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J360	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J361	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J362	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J363	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J364	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J365	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J366	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J367	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J368	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J369	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
J370	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J371	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J372	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J375	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J376	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J379	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J380	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J381	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J386	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J390	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J391	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J392	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J394	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J395	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J396	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J397	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J399	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J400	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J402	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J403	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J406	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J407	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J408	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J409	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J410	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J411	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J414	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J418	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J419	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J423	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J425	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J428	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J429	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J430	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J431	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J432	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
L202	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L203	5CPZ829K02	COIL PEAKING	8.2UH K (AXIAL 3.5MM)	
L301	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L302	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L701	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L702	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L703	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L704	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L705	5CPZ220K02	COIL PEAKING	22UH K (AXIAL 3.5MM)	
L710	5CPZ101K02	COIL PEAKING	100UH K (AXIAL 3.5MM)	
L711	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L712	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L713	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L714	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L750	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
L751	5CPZ100K04	COIL PEAKING	10UH 10.5MM K (LAL04TB)	
L903	5CPZ220K02	COIL PEAKING	22UH K (AXIAL 3.5MM)	
L904	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
L905	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	LA
R102	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R110	RD-4Z432J-	R CARBON FILM	1/4 4.3K OHM J	LA
R200	RD-4Z222J-	R CARBON FILM	1/4 2.2K OHM J	
R201	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R202	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	LA
R203	RD-4Z121J-	R CARBON FILM	1/4 120 OHM J	
R204	RD-4Z335J-	R CARBON FILM	1/4 3.3M OHM J	
R210	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R222	RD-4Z303J-	R CARBON FILM	1/4 30K OHM J	
R223	RD-4Z272J-	R CARBON FILM	1/4 2.7K OHM J	
R231	RD-4Z114J-	R CARBON FILM	1/4 110K OHM J	
R233	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R298	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R301	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	
R302	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R303	RD-2Z129J-	R CARBON FILM	1/2 1.2 OHM J	
R304	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R305	RD-4Z124J-	R CARBON FILM	1/4 120K OHM J	
R401	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
R402	RD-4Z122J-	R CARBON FILM	1/4 1.2K OHM J	
R403	RD-4Z272J-	R CARBON FILM	1/4 2.7K OHM J	
R406	RD-4Z363J-	R CARBON FILM	1/4 36K OHM J	
R407	RD-4Z333J-	R CARBON FILM	1/4 33K OHM J	
R409	RD-2Z103J-	R CARBON FILM	1/2 10K OHM J	
R410	RD-2Z271J-	R CARBON FILM	1/2 270 OHM J	
R411	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J	
R412	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R413	RD-2Z124J-	R CARBON FILM	1/2 120K OHM J	
R444	RD-4Z101J-	R CARBON FILM	1/4 100 OHM J	
R602	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J	
R603	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J	
R703	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R704	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R705	RD-4Z221J-	R CARBON FILM	1/4 220 OHM J	
R706	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R712	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R714	RD-4Z301J-	R CARBON FILM	1/4 300 OHM J	
R715	RD-4Z223J-	R CARBON FILM	1/4 22K OHM J	
R716	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R717	RD-4Z911J-	R CARBON FILM	1/4 910 OHM J	
R723	RD-4Z104J-	R CARBON FILM	1/4 100K OHM J	
R727	RD-4Z100J-	R CARBON FILM	1/4 10 OHM J	
R733	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R760	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R765	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R777	RD-4Z562J-	R CARBON FILM	1/4 5.6K OHM J	
R807	RD-2Z154J-	R CARBON FILM	1/2 150K OHM J	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R808	RD-2Z154J-	R CARBON FILM	1/2 150K OHM J	
R809	RD-AZ109J-	R CARBON FILM	1/6 1 OHM J	
R810	RD-2Z124J-	R CARBON FILM	1/2 120K OHM J	
R811	RD-2Z124J-	R CARBON FILM	1/2 120K OHM J	
R812	RD-4Z122J-	R CARBON FILM	1/4 1.2K OHM J	
R813	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J	
R814	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J	
R815	RD-4Z221J-	R CARBON FILM	1/4 220 OHM J	
R817	RD-4Z270J-	R CARBON FILM	1/4 27 OHM J	
R818	RD-4Z302J-	R CARBON FILM	1/4 3K OHM J	
R819	RD-AZ229J-	R CARBON FILM	1/6 2.2 OHM J	
R825	RC-2Z565J-	R CARBON COMP	1/2 5.6M OHM J	
R902	RD-4Z751J-	R CARBON FILM	1/4 750 OHM J	LA
R905	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	LA
R906	RD-4Z223J-	R CARBON FILM	1/4 22K OHM J	LA
R907	RD-4Z242J-	R CARBON FILM	1/4 2.4K OHM J	
RP01	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	PA
RP02	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
RP03	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	PA/LA
RP04	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
RP05	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	LA
ZZ300	PTCPMSC773	PCB CRT MANUAL AS	DVT-20F4PA	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
20	2193011101	SOLDER WIRE	RS 60-1.2 1.6A	
30	2291050301	FLUX SOLVENT	1CAN/14KG H-302	
40	2291050615	FLUX SOLDER	KS-892M-1	
50	2291140501	WAX COVER		
90	2291051001	FLUX KILLER	KFT-7	
20000	PTCPJRC773	PCB CRT RADIAL AS	DVT-20F4PA	
C501	CXCH1H221J	C CERA	50V CH 220PF J (TAPPING)	
C503	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C511	CXCH1H221J	C CERA	50V CH 220PF J (TAPPING)	
C513	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C521	CXCH1H221J	C CERA	50V CH 220PF J (TAPPING)	
C523	CCXB1H271K	C CERA	50V B 270PF K (TAPPING)	
C541	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
Q501	TKTC3207-	TR	KTC3207	
Q502	TKTA1266Y-	TR	KTA1266Y	
Q511	TKTC3207-	TR	KTC3207	
Q512	TKTA1266Y-	TR	KTA1266Y	
Q521	TKTC3207-	TR	KTC3207	
Q522	TKTA1266Y-	TR	KTA1266Y	
ZZ200	PTCPJAC773	PCB CRT AXIAL AS	DVT-20F4PA	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
A001	4859809213	PCB CRT	89X80(269X195/6)S	
J001	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R503	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R504	RD-AZ241J-	R CARBON FILM	1/6 240 OHM J	
R506	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R507	RD-AZ560J-	R CARBON FILM	1/6 56 OHM J	
R508	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	

LOC	PART-CODE	PART-NAME	PART-DESCRIPTION	REMARK
R509	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R513	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R514	RD-AZ241J-	R CARBON FILM	1/6 240 OHM J	
R516	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R517	RD-AZ560J-	R CARBON FILM	1/6 56 OHM J	
R518	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R519	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R523	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R524	RD-AZ241J-	R CARBON FILM	1/6 240 OHM J	
R525	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R526	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R527	RD-AZ560J-	R CARBON FILM	1/6 56 OHM J	
R528	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R541	RD-AZ621J-	R CARBON FILM	1/6 620 OHM J	
R542	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R543	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R544	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R550	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R551	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R552	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
C542	CCYB3D102K	C CERA	2KV B 1000PF K	
C543	CEXF2E220V	C ELECTRO	250V RSS 22MF (13X20) TP	
M681	4856812001	TIE CABLE	NYLON66 DA100	
P402	4850705S04	CONN AS	YH025-05+YST025+ULW=400	
P402A	4850703S19	CONN AS	YH025-03+YST025+ULW=300	
R501	RS02Y123J-	R M-OXIDE FILM	2W 12K OHM J	
R502	RV5221103-	R SEMI FIXED	V10K-5X2.5-6Y-PC-RP	
R505	RV5221201-	R SEMI FIXED	EVN D2A A03 200 OHM B	
R511	RS02Y123J-	R M-OXIDE FILM	2W 12K OHM J	
R512	RV5221103-	R SEMI FIXED	V10K-5X2.5-6Y-PC-RP	
R515	RV5221201-	R SEMI FIXED	EVN D2A A03 200 OHM B	
R521	RS02Y123J-	R M-OXIDE FILM	2W 12K OHM J	
R522	RV5221103-	R SEMI FIXED	V10K-5X2.5-6Y-PC-RP	
S901	4859302530	SOCKET CRT	ISM-03S	

■DIFFERENT PARTS

1. ACCORDING TO SYSTEM

NO	SYSTEM / LOC.	PAL-I [PA]	PAL-B/G [FA]	P/S-B/G SECAM-L/L' [LA]	REMARK
1	I201	TDA8362B	←	TDA8362	MAIN VIF
2	I203			TDA8395	SECAM L/L'
3	I701	M37206MC-231SP	M37206MC-233SP	←	u-COM
4	I703	(SDA5648)	←	←	PDC/VPS
5	I720			TDA9830	MAIN AM DEMOD.
6	I901	TDA9800	←	TDA9802	SUB VIF
7	I902			TDA9830	SUB AM DEMOD.
8	U001	FAL2163/84	FAL2463/84	←	TUNER MAIN
9	U002	FL2171/84A	FL2471/84	←	TUNER SUB
10	Z101	J1951M	G1966M	G1966M	FILTER SAW
11	Z102	J1951M	G1966M	G1966M	"
12	Z103			L9461M	"
13	Z104			L9461M	"
14	Z105		40.4MHz	←	TRAP
15	Z201	TPS6.0	TPS5.5	←	
16	Z203	SFE6.0	SFE5.5	←	
17	Z901	TPS6.0	TPS5.5	←	
18	Z903	SFE6.0	SFE5.5	←	
19	C102	10uF	←	33uF	TUNER AGC (MAIN)
20	C200			30pF	TRIMMER
21	C755			4.7uF	
22	C756			4.7uF	
23	C901	10uF	←	33uF	TUNER AGC (SUB)
24	C905			47uF	
25	C906			100uF	
26	C907			4.7uF	
27	C908			4.7uF	
28	CC102			100pF	
29	CC120			1000pF	
30	CC201			2200pF	
31	CC202			10pF	
32	CC205			0.1uF	
33	CC234			0.22uF	
34	CC750			0.1uF	
35	CC759			0.22uF	
36	CC906			100pF	
37	CC909	8pF	←		
38	CC915			0.1uF	
39	CC916			1000pF	
40	CC917			1000pF	
41	CC918			0.22uF	
42	CC920			1000pF	

NO	SYSTEM LOC.	PAL-I [PA]	PAL-B/G [FA]	P/S-B/G SECAM-L/L' [LA]	REMARK
43	CC921			1000pF	
44	D110			1S2186	
45	D111			1S2186	
46	D206			1S2186	
47	D207			1N4148	
48	D902			BB909A	
49	D903			5.1V	
50	D904			5.1V	
51	D905			1S2186	
52	D906			1S2186	
53	F801C	4857621200			INSU COVER
54	J061			JUMPER	SCM-L
55	J062			JUMPER	SCM-L
56	J306	JUMPER	←		B/G SOUND
57	J342	JUMPER	←		"
58	L905			10uH	
59	PWC1	CW-3222	CW-4232	←	POWER CODE
60	Q110			KTC3197	
61	Q111			KTC3198Y	
62	Q112			KTC3198Y	
63	Q201			KTC3198Y	
64	Q202			KTA1266Y	
65	Q205			KTC3198Y	
66	Q206			KTA1266Y	
67	Q209			KTC3198Y	
68	Q902			KTC3198Y	
69	Q904			KTC3198Y	
70	Q905			KTC3198Y	
71	Q906			KTC3198Y	
72	Q907			KTC3197	
73	R091			10KB	SCM-L2'
74	R110			1/4 4.3K	
75	R202			1/4 4.7K	
76	R902			1/4 750	
77	R905			1/4 4.7K	
78	R906			1/4 22K	
79	RC106			1/10 100	
80	RC111			1/10 2.2K	
81	RC112			1/10 10K	
82	RC113			1/10 10K	
83	RC114			1/10 10K	
84	RC115			1/10 22K	
85	RC116			1/10 68K	
86	RC120			1/10 1K	
87	RC123			1/10 1K	
88	RC201			1/10 4.7K	
89	RC202			1/10 4.7K	

NO	SYSTEM / LOC.	PAL-I [PA]	PAL-B/G [FA]	P/S-B/G SECAM-L/L' [LA]	REMARK
90	RC203			1/10 4.7K	
91	RC204			1/10 22K	
92	RC207			1/10 4.7K	
93	RC208			1/10 22K	
94	RC211			1/10 10K	
95	RC212			1/10 4.7K	
96	RC213			1/10 39K	
97	RC299			1/10 22K	
98	RC730			1/10 4.7K	
99	RC782			1/10 10K	
100	RC797	1/10 9.1K	←	1/10 6.8K	
101	RC901			1/10 4.7K	
102	RC908			1/10 10K	
103	RC909			1/10 68K	
104	RC910			1/10 10K	
105	RC911			1/10 22K	
106	RC912			1/10 100	
107	RC913			1/10 4.3K	
108	RC914			1/10 4.7K	
109	RC915			1/10 2.2K	
110	RC916			1/10 7.5K	
111	RC917			1/10 10K	
112	RC918			1/10 100K	
113	RC920			1/10 100K	
114	RC921			1/10 330	
115	RC925			1/10 4.7K	
116	RCP08	(1/10 1K)	←	←	VPS,PDC OPTION
117	RCP09				CLOCK OPTION
118	RCP17	1/10 1K	←	←	TEXT(WEST) ON OPTION
119	RCP18				TEXT TURKISH OPTION
120	RCP19				TEXT EAST OPTION
121	RCP23	1/10 1K	←	←	AV2 OPTION
122	RP01	1/4 1K			U-BAND ONLY OPTION
123	RP02	1/4 1K	←	←	S.VIEW OPTION
124	RP03	1/6 1K		1/6 1K	SP/LP OPTION
125	RP04			1/4 2K	SYSTEM OSD
126	RP05			1/4 1K	SCM-L OPTION

2. ACCORDING TO OPTION

BASIC : SHOWVIEW, VPS/PDC(EX CEPT:PA), TELETEXT

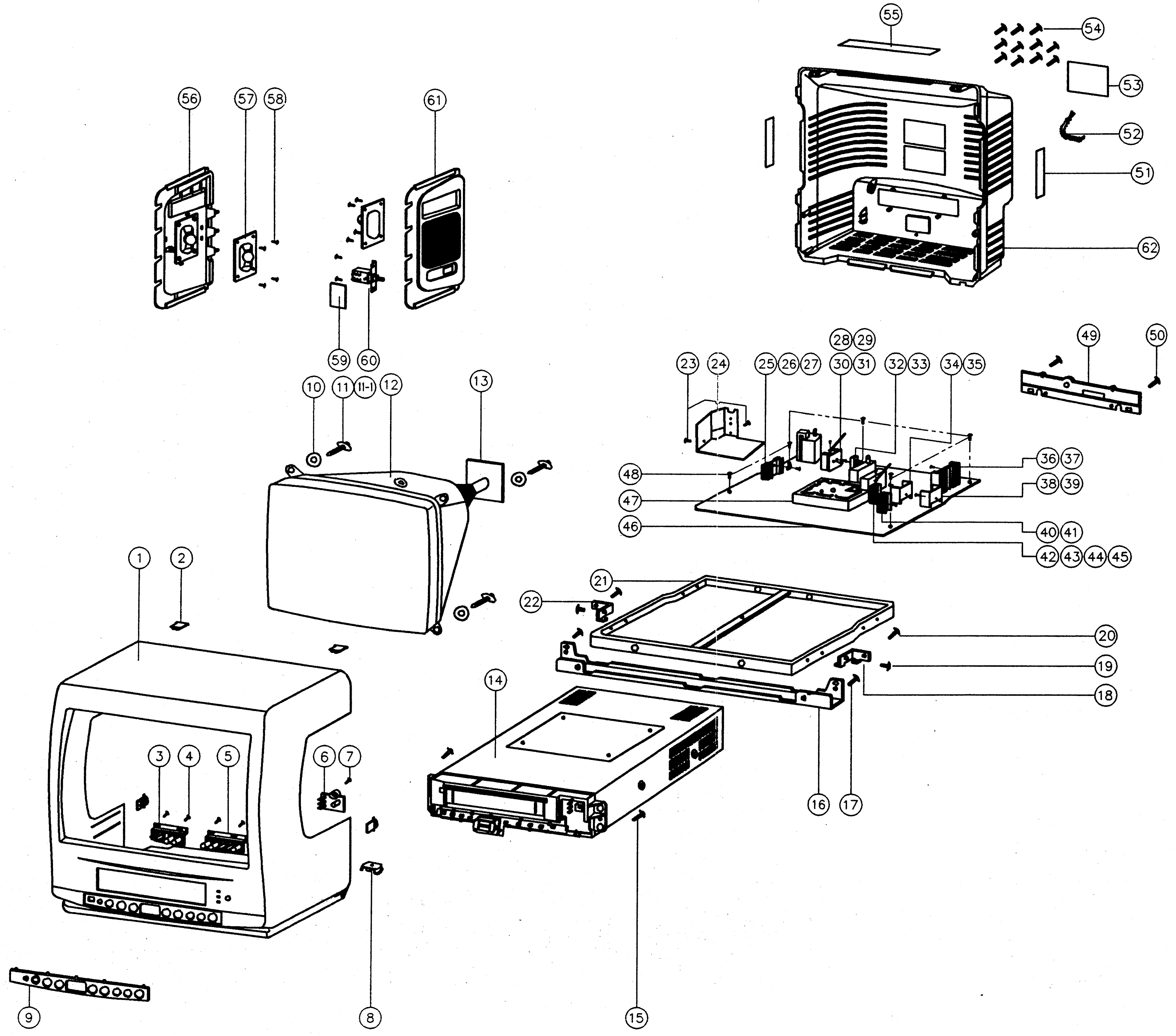
NO	FUNCTION	ACTION	PART	REMARK
1	NO SHOWVIEW	DELETE	RP02	
2	NO VPS/PDC	DELETE	I703	
		DELETE	RCP08	
3	AV1,AV2→ AV	DELETE	RCP23	
4	W/O TEXT	ADD	J258	
		DELETE	RCP18	
		DELETE	I710	
		DELETE	I711	

3. ACCORDING TO CRT SIZE

N0.	LOC.	20"	21"	REMARK
1	CRT	A48JLL90X	A51JSW90X	
2	D/G COIL	DC-2050	DC-2070	
3	CRT GND AS	2001S-1-15-1P	2101S-1-15-1P	
4	T402	DCF-2217J	DCF-2217L	FBT
5	C407	1.6KV 7500pF	1.6KV 8200pF	MYLAR
6	C408	2KV 220pF	2KV 270pF	
7	C409	200V 0.47uF	200V 0.33uF	MYLAR
8	R801	J503P54D180M290	J503P53D140M290L	POSISTOR
9	RC301	1/10W 510K ohm	1/10W 220K ohm	
10	RC304	1/10W 820 ohm	1/10W 680 ohm	
11	RC305	1/10W 560 ohm	1/10W 270 ohm	

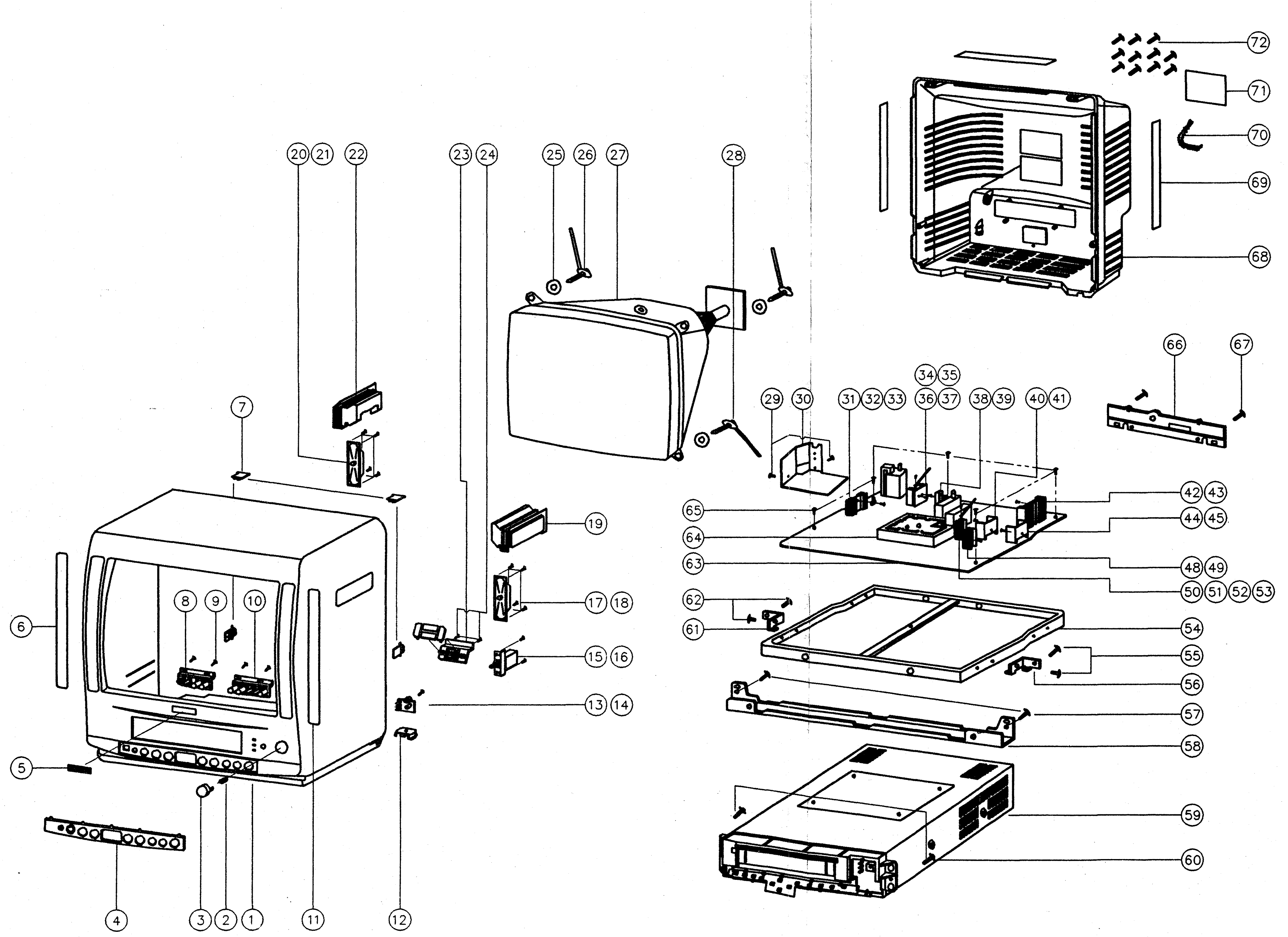
EXPLODED VIEW

DVT-20F4



62	4852139401	COVER BACK	1	HIPS BK	
61	4851920601	SPKR PANEL AS(R)	1		
60		POWER S/W	1	Preh ME7	
59		PCB POWER S/W	1		
58	7128301011	SCREW TAPPING	10	T2S WAS 3X10 MFZN	
57		SPEAKER	2		
56	4851920611	SPKR PANEL AS(L)	1		
55	4857817610	CLOTH BLACK	1	FELT T0.7 L=300	
54	7122401411	SCREW TAPPING	11	T2S TRS 4X14 MFZN	
53	4855415800	PLATE SPEC	1	150ART P/E FILM	
52	4856816200	CLAMP CORD	1	NYLON 66 BLK 5280N	
51	4857817620	CLOTH BLACK	2	FELT T0.7 L=100	
50	7122401212	SCREW TAPPING	2	T2S TRS 4X12 MFZN	BK
49	4853627501	TERMINAL ANT	1	HIPS BK	
48	7128301011	SCREW TAPPING	6	T2S WAS 3X10 MFZN	
47	4857230600	SHIELD CASE	1	SPTH-C T0.3	
46		PCB	1		
45	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN	
44	4856815900	CLAMP WIRE	1	EGI T0.4+PVC COATING	
43	7121300811	SCREW TAPPING	1	T2S PAN 3X8 MFZN	
42	4857024900	HEAT SINK	1	AL EX	
41	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
40	4857024900	HEAT SINK	1	AL EX	
39	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
38	4857025401	HEAT SINK	1	A1050P-H24 T2.0	
37	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
36	4857026500	HEAT SINK	1	AL EX	
35	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
34	4857025400	HEAT SINK	1	A1050P-H24 T2.0	
33	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
32	4857026900	HEAT SINK	1	AL EX	
31	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN	
30	4856815900	CLAMP WIRE	1	EGI T0.4+PVC COATING	
29	7174300811	SCREW TAPPTITE	2	TT2 RND 3X8 MFZN	
28	4857024601	HEAT SINK	1	AL EX	
27	4856215201	WASHER	1	SPCC	
26	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
25	4857024500	HEAT SINK	1	AL EX	
24	4857231950	SHIELD PLATE	1	SECC T1.0	
23	7122401011	SCREW TAPPING	2	T2S TRS 4X10 MFZN	
22	4853947500	BRKT CHASSIS	1	SECC T1.5	
21	4853811000	FRAME MAIN PCB	1	FR HIPS BK	
20	7122401411	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
19	7122401011	SCREW TAPPING	2	T2S TRS 4X10 MFZN	
18	4853947501	BRKT CHASSIS	1	SECC T1.5	
17	7122401411	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
16	4853744200	RETA FRAME	1	SECC T1.0	
15	7122401411	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
14		VCR TOTAL AS	1		
13		PCB CRT DRIVE	1		
12		CRT	1		
11-1	4856013302	SCREW CRT FIXING AS	2	L=190	
11	4856013300	SCREW CRT FIXING AS	2	L=80	
10	4856215402	WASHER RUBBER	4	CR	
9	4852319601	PANEL CTRL	1	ABS BK	
8	4853525500	HOLDER CORD	1	FR HIPS BK	
7	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN	
6	4855522600	DECO SENSOR	1	PMMA	
5	4854925201	BUTTON A	1	ABS BK	
4	7128301211	SCREW TAPPING	4	T2S WAS 3X12 MFZN	
3	4854925301	BUTTON B	1	ABS BK	
2	4853311601	RETA [illegible]ACK	4	HIPS [illegible]C	
1	4852052501	MASK FRONT	1	HIPS BK	

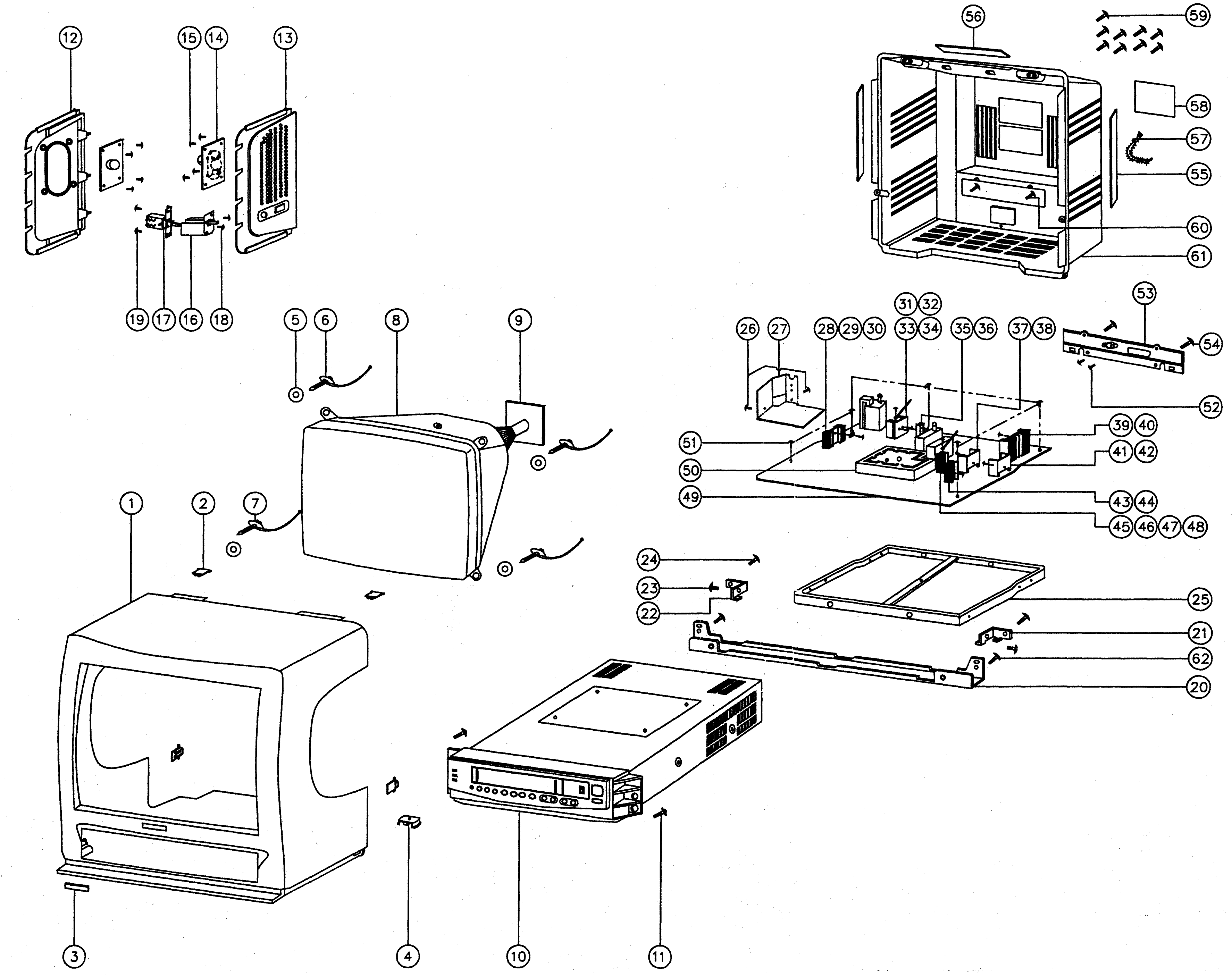
DVT-21F4



72	7122401612	SCREW TAPPING	11	T2S TRS 4X16 MFZN	BK
71	4855415800	SPEC PLATE	1	150ART P/E FILM	
70	97P4602700	CLAMP CORD	1	NYLON66 BLK 5280N	
69	4857817610	CLOTH BLACK	3	FELT T0.7 L=300	
68	4852139501	COVER BACK	1	HIPS BK	
67	7122401212	SCREW TAPPING	2	T2S TRS 4X12 MFZN	BK
66	4853627501	TERMINAL ANT	1	HIPS BK	
65	7128301011	SCREW TAPPING	6	T2S WAS 3X10 MFZN	
64	4857230600	SHIELD CASE	1	SPTH-C T0.3	
63		PCB	1		
62	7122401412	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
61	4853947500	BRKT CHASSIS	1	SECC T1.5	
60	7122401412	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
59		VCR CHASSIS AS	1	DVT-21F4	
58	4853744300	RETA FRAME	1	SECC T1.0	
57	7122401412	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
56	4853947500	BRKT CHASSIS	1	SECC T1.5	
55	7122401412	SCREW TAPPING	2	T2S TRS 4X14 MFZN	
54	4853811010	FRAME MAIN PCB	1	FR HIPS	
53	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN	
52	4856815900	CLAMP WIRE	1	EGI T0.4+PVC COATING	
51	7121300811	SCREW TAPPING	1	T2S PAN 3X8 MFZN	
50	4857024900	HEAT SINK	1	AL EX	
49	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
48	4857024900	HEAT SINK	1	AL EX	
45	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
44	4857025401	HEAT SINK	1	A1050P-H24 T2.0	
43	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
42	4857026500	HEAT SINK	1	AL EX	
41	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
40	4857025400	HEAT SINK	1	A1050P-H24 T2.0	
39	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
38	4857026900	HEAT SINK	1	AL EX	
37	7128261011	SCREW TAPPING	1	T2S WAS 2.6X10 MFZN	
36	4856815900	CLAMP WIRE	1	EGI T0.4+PVC COATING	
35	7174300811	SCREW TAPPTITE	2	TT2 RND 3X8 MFZN	
34	4857024601	HEAT- SINK	1	AL EX	
33	4856215201	WASHER	1	SPCC	
32	7174300811	SCREW TAPPTITE	1	TT2 RND 3X8 MFZN	
31	4857024500	HEAT SINK	1	AL EX	
30	4857231950	SHIELD PLATE	1	SECC T1.0	
29	7122401011	SCREW TAPPING	2	T2S TRS 4X10 MFZN	
28	4856013301	SCREW CRT FIXING AS	2	L=140	
27		CRT	1		
26	4856013301	SCREW CRT FIXING AS	2	L=140	
25	4856215402	WASHER RUBBER	4	CR	
24	7128301011	SCREW TAPPING	2	T2S WAS 3X10 MFZN	
23	4851924650	BUTTON CTRL AS	1	DVT-21F4	
22	PTHLPWJ271	HANDLE L AS	1	4852613201+4852613401	
21	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	
20		SPEAKER AS	1		
19	PTHDPWJ271	HANDLE R AS	1	4852613301+4852613401	
18	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	
17		SPEAKER AS	1		
16	7128301011	SCREW TAPPING	2	T2S WAS 3X10 MFZN	
15	5S40202142	SW PUSH	1		
14	7128301011	SCREW TAPPING	1	T2S WAS 3X10 MFZN	
13	4855522600	DECO SENSOR	1	PMMA	
12	4853525500	HOLDER CORD	1	FR HIPS BK	
11	4852528300	GRILL SPKR R	1	PS SHEET T0.54	
10	4854926501	BUTTON A	1	ABS BK	
9	7128301011	SCREW TAPPING	4	T2S WAS 3X10 MFZN	
8	4854926601	BUTTON B	1	ABS BK	
7	4853311601	RETAINER BACK	4	HIPS NC	
6	4852528400	GRILL SPKR L	1	PS SHEET T0.54	
5	4855615900	MARK BRAND	1	A1050P-H24 T0.4	
4	4852319801	PANEL CTRL	1	ABS BK	
3	4854842501	BUTTON POWER	1	ABS BK	
2	4856716001	SPRING	1	SWPA PIE 0.5	
1	4852052601	MASK FRONT	1	HIPS BK	

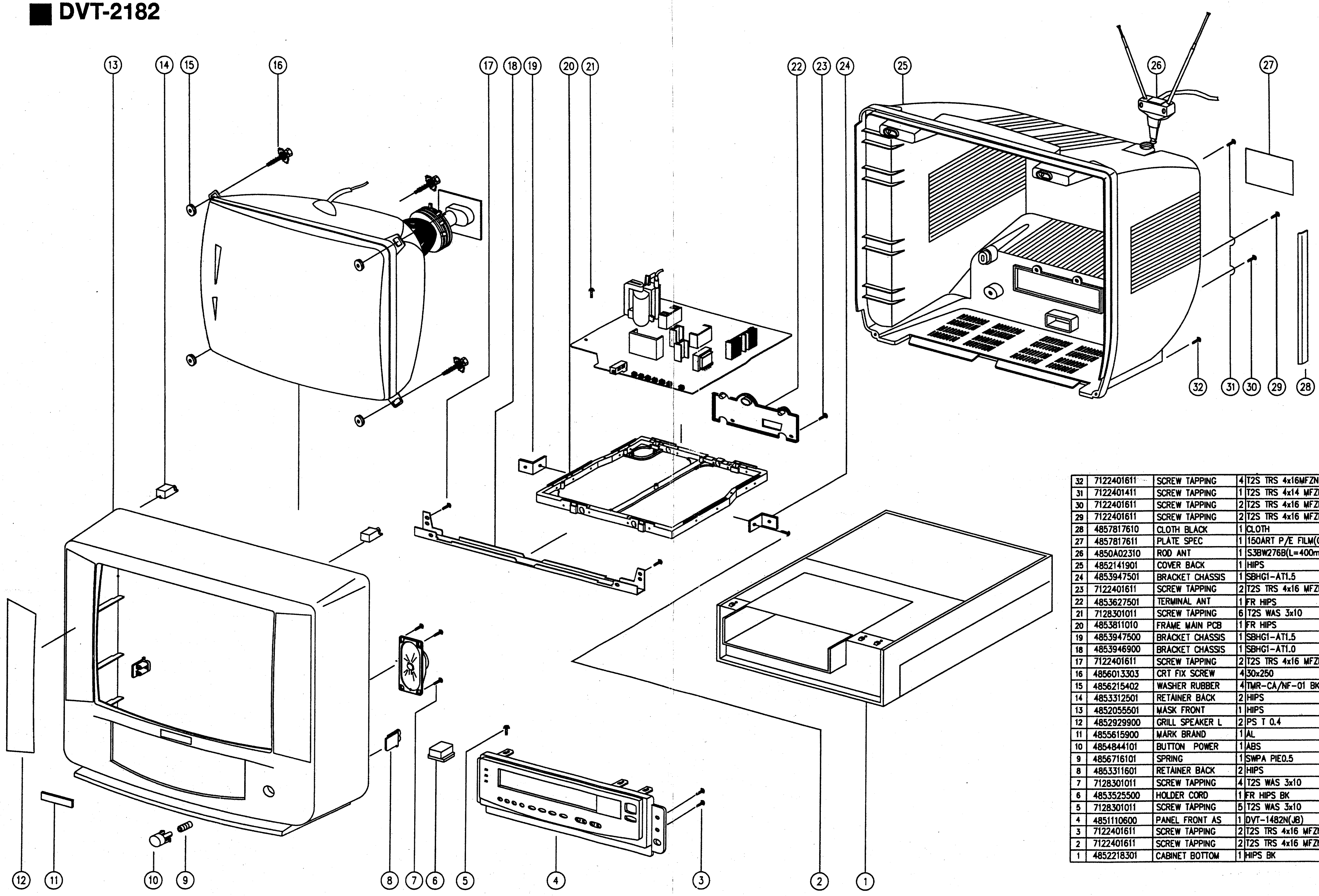
EXPLODED VIEW

DVT-2082



	7122401411	SCREW TAPPING		T2R TRS 4X14 MFZN	
	4852139100	COVER BACK		FR HIPS BK	
	7122401412	SCREW TAPPING		T2S TRS 4X14 MFZN BK	
	7122401612	SCREW TAPPING		T2S TRS 4X16 MFZN BK	
	4855415700	SPEC PLATE		P.C CLEAR T0.3 (C/TV)	
	97P4602700	CLAMP CORD		NYLON 66 BLK 5280N	
	4857817611	CLOTH BLACK		FELT T0.7 L=200	
	4857817610	CLOTH BLACK		FELT T0.7 L=300	
	7122401211	SCREW TAPPING		T2S TRS 4X12 MFZN	
	4853625931	TERMINAL ANT		HIPS BK	
		SCREW TAPPING		T2S FLT 3X8 MFZN	
	4853811000	FRAME MAIN PCB		FR HIPS BK	
	7122401411	SCREW TAPPING		T2S TRS 4X14 MFZN	
	7122401011	SCREW TAPPING		T2S TRS 4X10 MFZN	
	4853947500	BRKT CHASSIS		SECC T1.5	
	4853947501	BRKT CHASSIS		SECC T1.5	
	4853744203	RETA FRAME		SECC T1.0	
	7122401411	SCREW TAPPING		T2S TRS 4X14 MFZN	
	7128301011	SCREW TAPPING		T2S WAS 3X10 MFZN	
		POWER S/W		Pren ME7	
	4853936302	BRKT POWER		FR HIPS BK	
	7128301011	SCREW TAPPING		T2S WAS 3X10 MFZN	
	4858305120	SPEAKER		1.5W 8 OHM PF-2D32S	
	4851919707	PANEL SPKR AS		DVT-2082A RIGHT	
	4851919704	PANEL SPKR AS		DVT-2082J LEFT	
	7122401411	SCREW TAPPING		T2S TRS 4X14 MFZN	
		VCR TOTAL AS		SV-1482D	
		PCB CRT DRIVE			
	4859603962	CRT		A48JLL41X02 M08	
	4856013302	SCREW CRT FIXING AS		L=190MM	
	4856013300	SCREW CRT FIXING AS		L=70MM	
	4856215402	WASHER RUBBER		CR	
	4853525500	HOLDER CORD		FR HIPS BK	
	4855615900	MARK BRAND		A1050P-H24 T0.4	
	4853311601	RETA BACK			
	4852052201	MASK FRONT		HIPS BK	

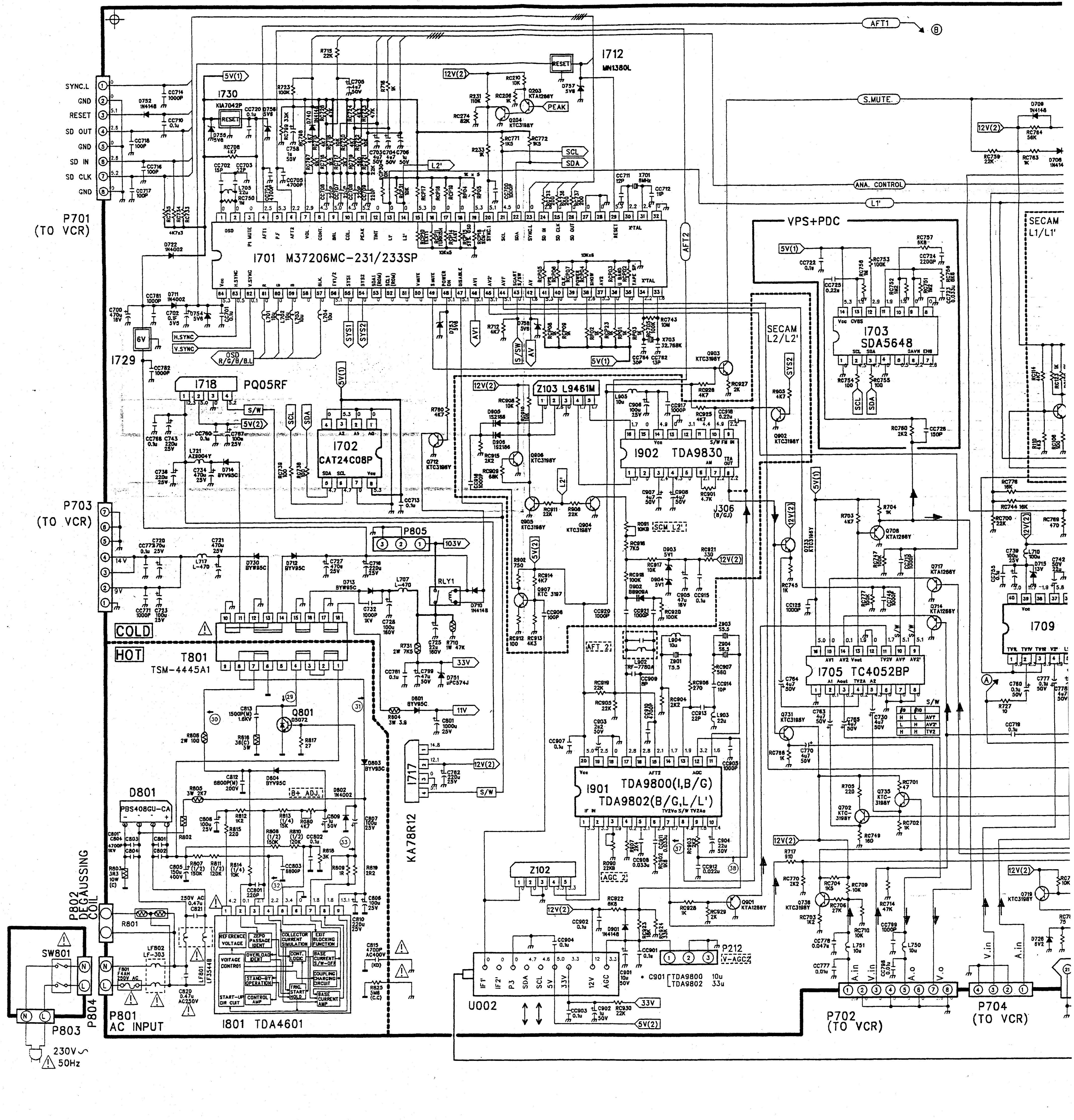
■ DVT-2182

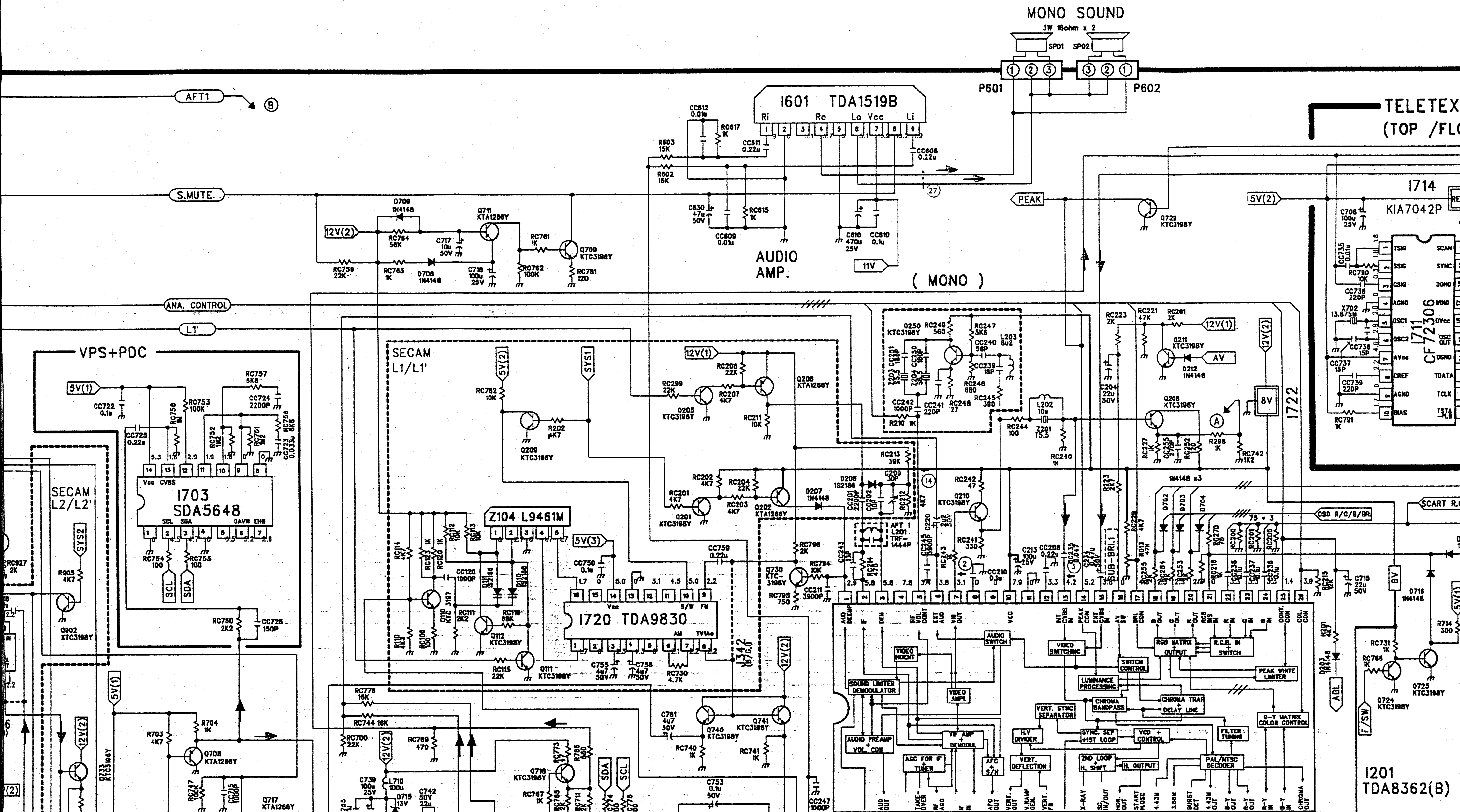


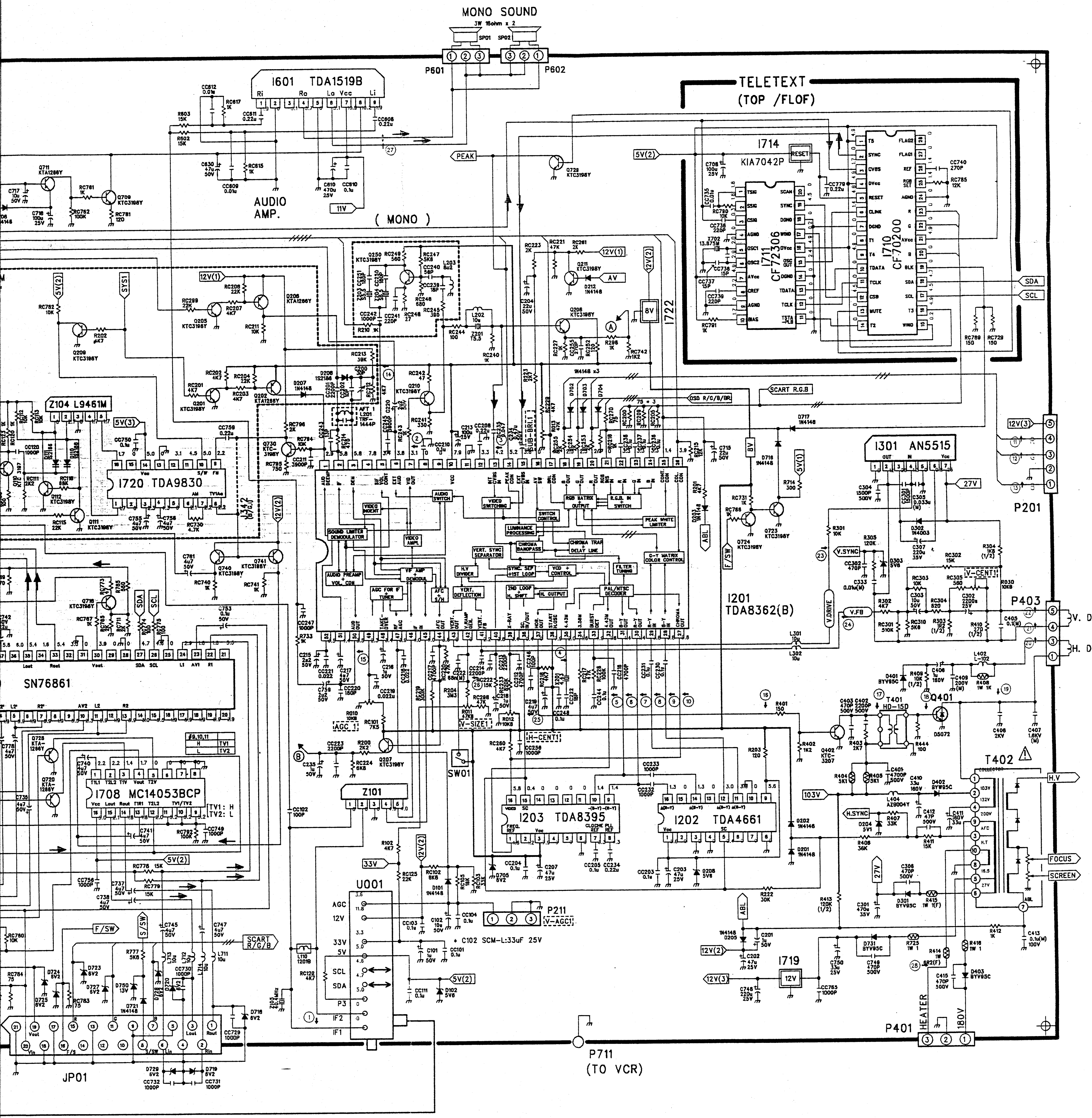
32	7122401611	SCREW TAPPING	4	T2S TRS 4x16MFZN	
31	7122401411	SCREW TAPPING	1	T2S TRS 4x14 MFZN	
30	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
29	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
28	4857817610	CLOTH BLACK	1	CLOTH	
27	4857817611	PLATE SPEC	1	150ART P/E FILM(C/TV)	
26	4850A02310	ROD ANT	1	S3BW276B(L=400mm)	
25	4852141901	COVER BACK	1	HIPS	
24	4853947501	BRACKET CHASSIS	1	SBHG1-AT1.5	
23	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
22	4853627501	TERMINAL ANT	1	FR HIPS	
21	7128301011	SCREW TAPPING	6	T2S WAS 3x10	
20	4853811010	FRAME MAIN PCB	1	FR HIPS	
19	4853947500	BRACKET CHASSIS	1	SBHG1-AT1.5	
18	4853946900	BRACKET CHASSIS	1	SBHG1-AT1.0	
17	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
16	4856013303	CRT FIX SCREW	4	30x250	
15	4856215402	WASHER RUBBER	4	TMR-CA/NF-01 BK	
14	4853312501	RETAINER BACK	2	HIPS	
13	4852055501	MASK FRONT	1	HIPS	
12	4852929900	GRILL SPEAKER L	2	PS T 0.4	
11	4855615900	MARK BRAND	1	AL	
10	4854844101	BUTTON POWER	1	ABS	
9	4856716101	SPRING	1	SWPA PIE0.5	
8	4853311601	RETAINER BACK	2	HIPS	
7	7128301011	SCREW TAPPING	4	T2S WAS 3x10	
6	4853525500	HOLDER CORD	1	FR HIPS BK	
5	7128301011	SCREW TAPPING	5	T2S WAS 3x10	
4	4851110600	PANEL FRONT AS	1	DVT-1482N(JB)	
3	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
2	7122401611	SCREW TAPPING	2	T2S TRS 4x16 MFZN	
1	4852218301	CABINET BOTTOM	1	HIPS BK	

CP-350 CHASSIS SCHEMATIC DIAGRAM

RUN NO.3 NOVEMBER, 1996


AFT1
S.MUTE.
ANA. CONTROL
L1'
1712
MN1380L
RESET
PEAK
SCL
SDA
12V(2)
5V(1)
1730
KIA7042P
L2'
SYNC.L
GND
RESET
SD OUT
GND
SD IN
SD CLK
GND
P701
(TO VCR)
1701 M37206MC-231/233SP
AFT2
VPS+PDC
1703
SDA5648
SECAM
L1/L1'
SECAM
L2/L2'
SYS2
1729
6V
H.SYNC
V.SYNC
OSD
R/G/B/B.L
SYS1
SYS2
AV1
S/SW
AV
1718 PQ05RF
S/W
5V(2)
1702
CAT24C08P
Z103 L9461M
1902 TDA9830
J306
(B/G/J)
SCM L2'
P703
(TO VCR)
14V
9V
P805
103V
RLY1
COLD
HOT
T801
TSM-4445A1
33V
11V
Q801
D801
PBS408GU-CA
1717
KA78R12
B+ ADJ.
AFT 2
AGC 2
Z102
1901 TDA9800(I,B/G)
TDA9802(B/G,L/L')
1705 TC4052BP
1709
P802
DEGAUSSING
COIL
SW801
P804
P803
P801
AC INPUT
230V∿
50Hz
1801 TDA4601
REFERENCE VOLTAGE
ZERO PASSAGE IDENT
COLLECTOR CURRENT SIMULATION
EXIT BLOCKING FUNCTION
VOLTAGE CONTROL
OVERLOAD IDENT
BASE CURRENT S/W-OFF
STAND-BY OPERATION
COUPLING CHARGING CIRCUIT
START-UP CIR CUIT
CONTROL AMP
TRIG. START HOLD
BASE CURRENT AMP
U002
IF1'
IF2'
P3
SDA
SCL
5V
33V
12V
AGC
P212
V-AGC2
• C901 TDA9800 10u
TDA9802 33u
P702
(TO VCR)
A.in
V.in
A.o
V.o
P704
(TO VCR)
V.in
A.in


MONO SOUND
3W 16ohm x 2
SP01
SP02
P601
P602
I601 TDA1519B
AUDIO AMP.
(MONO)
AFT1
S.MUTE.
PEAK
ANA. CONTROL
L1'
12V(2)
11V
5V(2)
TELETEX
(TOP /FL
I714
KIA7042P
I711 CF72306
VPS+PDC
I703 SDA5648
SECAM L2/L2'
SECAM L1/L1'
SYS1
SYS2
Z104 L9461M
I720 TDA9830
I709 SN76861
I705 TC4052BP
I708 MC14053BCP
TV1: H
TV2: L
I722
I201 TDA8362(B)
I203 TDA8395
I202 TDA4661
Z101
SW01
U001
AGC
12V
33V
5V
SCL
SDA
P3
IF2
IF1
P211
V-AGC1
AGC 1
V-SIZE1
H-CENT1
ABL
F/SW
S/SW
SCART R/G/B
SCART R.G.
OSD R/C/B/BR
I719
12V(3)
* C102 SCM-L:33uF 25V
P702 (TO VCR)
P704 (TO VCR)
JP01
P711 (TO VCR)
A.in
V.in
A.o
V.o
8V
33V



MONO SOUND
3W 16ohm x 2
SP01
SP02
P601
P602
I601 TDA1519B
AUDIO AMP.
(MONO)
PEAK
11V
TELETEXT
(TOP /FLOF)
I714
KIA7042P
RESET
5V(2)
I711 CF72306
I710 CF70200
SDA
SCL
12V(1)
AV
12V(2)
8V
I722
5V(2)
SYS1
Z104 L9461M
5V(3)
I720 TDA9830
OSD R/G/B/BR
SCART R.G.B
12V(3)
I301 AN5515
27V
P201
I201
TDA8362(B)
V.SYNC
V.DRIVE
V.FB
P403
V. DY
H. DY
ABL
F/SW
Q401
T401 HD-15D
T402
H.V
103V
H.SYNC
FOCUS
SCREEN
SN76861
I708 MC14053BCP
TV1: H
TV2: L
AGC 1
V-SIZE1
H-CENT1
V-CENT1
SW01
Z101
I203 TDA8395
I202 TDA4661
33V
U001
AGC
12V
33V
5V
SCL
SDA
P3
IF2
IF1
P211
V-AGC1
* C102 SCM-L:33uF 25V
I719
12V
F/SW
S/SW
SCART R/G/B
JP01
P711
(TO VCR)
P401
HEATER
180V

CHASSIS : CP - 350

SCHEMATIC DIAGRAM

- * PAL - I
- * PAL - B/G
- * PAL-B/G, SECAM-L/L'

RUN NO.3 NOVEMBER, 1996

NOTES :

1. THE UNITS OF RESISTANCE "OHM" IS OMITTED.
   (K=1000 OHMS M=1000000 OHMS)
2. ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES 1.0 AND ABOVE ARE IN pF THOSE BELOW ARE IN uF EXCEPT AS INDICATED.
   (uF=1000000 pF)
4. INDUCTOR VALUES ARE IN uH EXCEPT AS INDICATED.
5. ALL DIODES ARE 1N4148 EXCEPT AS INDICATED.
6. ALL NPN TRANSISTORS ARE KTC3198Y ALL PNP TRANSISTORS ARE KTA1266Y EXCEPT AS INDICATED.
7. DC VOLTAGE AND AC WAVEFORM MEASUREMENT CONDITIONS.

   ALL THE VOLTAGES AT EACH POINT IS MEASURED UNDER THE STANDARD COLOUR BAR SIGNAL INPUT (5 CHANNEL) AND ALL CONTROLS SET TO THE MAXIMUM POSITION.

   (DC VOLTAGES WITH VTVM AND AC WAVEFORMS WITH OSCILLOSCOPE)

   (FOR A NOMINAL LINE VOLTAGE : AC 230V 50Hz)
8. SINCE THIS SCHEMATIC DIAGRAM IS A STANDARD ONE THE CIRCUIT AND CIRCUIT CONSTANTS MAY BE SUBJECT TO CHANGE FOR IMPROVEMENT WITHOUT ANY NOTICE.

SAFETY CAUTION :

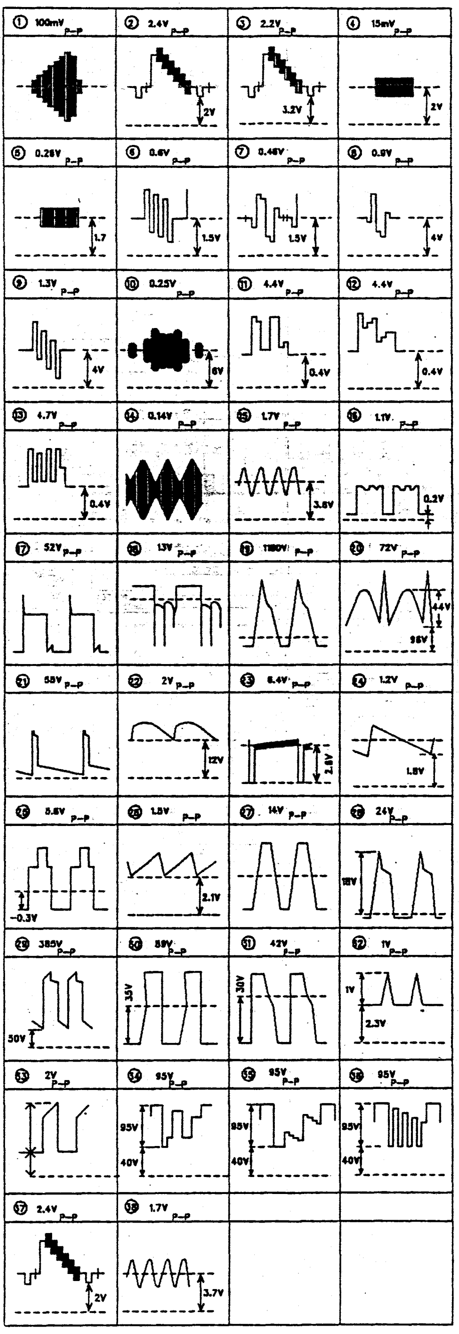
BEFORE SERVICING THIS CHASSIS IT IS IMPORTANT THAT THE SERVICE TECHNICIAN READ AND FOLLOW THE "X-RAY RADIATION PRECAUTION". "SAFETY PRECAUTIONS" AND "PRODUCT SAFETY NOTICE" IN THE SERVICE MANUAL.

PRODUCT SAFETY NOTE :

THE COMPONENTS INDICATED WITH SYMBOL ⚠ ARE IMPORTANT FOR MAINTAINING.
THE SAFETY OF THE SET AND SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL OR SPECIFIED ONE IN THE PARTS LIST.
DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

WAVE FORMS

INPUT SIGNAL : PAL SYSTEM
VIDEO : 8 STEP COLOUR BAR 87.5% AM
AUDIO : 1KHz SINE WAVE 60% FM



DIFFERENT PART FOR SYSTEM (!)

NO.	SYSTEM / LOC.	P - I	P-B/G	PAL-B/G SECAM-L/L'	REMARK
1	I201	TDA8362B	←	TDA8362	MAIN VIF
2	I203			TDA8395	
3	I701	M37208MC-231SP	M37208MC-233SP	←	MICOM
4	I703	(SDA5648)	←	←	VPS/PDC
5	I720			TDA9830	
6	I901	TDA9800	←	TDA9802	SUB VIF
7	I902			TDA9830	
8	U001	FAL2163/84	FAL2463/84	←	TUNER MAIN
9	U002	FL2171/84A	FL2471/84	←	TUNER SUB
10	Z101	J1951M	G1966M	←	
11	Z102	J1951M	G1966M	←	
12	Z103			L9461M	
13	Z104			L9461M	
14	Z105		40.4MHz	40.4MHz	
15	Z201	TPS6.0	TPS5.5	←	
16	Z203	SFE6.0	SFE5.5	←	
17	Z901	TPS6.0	TPS5.5	←	
18	Z903	SFE6.0	SFE5.5	←	
19	C102	10uF	←	33uF	AGC MAIN
20	C200			30pF	TRIMMER
21	C755			4.7uF	
22	C756			4.7uF	
23	C901	10uF	←	33uF	AGC SUB
24	C905			47uF	
25	C906			100uF	
26	C907			4.7uF	
27	C908			4.7uF	
28	CC102			100pF	
29	CC120			1000pF	
30	CC201			2200pF	
31	CC202			10pF	
32	CC205			0.1uF	
33	CC234			0.22uF	
34	CC750			0.1uF	
35	CC759			0.22uF	
36	CC906			100uF	
37	CC909	8pF	←		
38	CC915			0.1uF	
39	CC916			1000pF	
40	CC917			1000pF	
41	CC918			0.22uF	
42	CC920			1000pF	
43	CC921			1000pF	
44	D110			1S2186	
45	D111			1S2186	
46	D206			1S2186	
47	D207			1N4148	
48	D902			BB909A	
49	D903			5.1V	
50	D904			5.1V	
51	D905			1S2186	
52	D906			1S2186	
53	F801C	4857621200			INSU COVER
54	J061			WIRE COPPER	SECAM-L
55	J062			WIRE COPPER	SECAM-L
56	J306	WIRE COPPER			B/G SOUND
57	J342	WIRE COPPER			B/G SOUND
58	L905			10uH	
59	PWC1	CW-3222	CW-4232	←	POWER CORD
60	Q110			KTC 3197	
61	Q111			KTC3198Y	
62	Q112			KTC3198Y	
63	Q201			KTC3198Y	
64	Q202			KTA1266Y	
65	Q205			KTC3198Y	
66	Q206			KTA1266Y	
67	Q209			KTC3198Y	
68	Q902			KTC3198Y	
69	Q904			KTC3198Y	
70	Q905			KTC3198Y	
71	Q906			KTC3198Y	
72	Q907			KTC 3197	

NO.	SYSTEM / LOC.	P - I
73	R091	
74	R110	
75	R202	
76	R902	
77	R905	
78	R906	
79	RC106	
80	RC111	
81	RC112	
82	RC113	
83	RC114	
84	RC115	
85	RC116	
86	RC120	
87	RC123	
88	RC201	
89	RC202	
90	RC203	
91	RC204	
92	RC207	
93	RC208	
94	RC211	
95	RC212	
96	RC213	
97	RC299	
98	RC730	
99	RC782	
100	RC797	1/10 9.1K
101	RC901	
102	RC908	
103	RC909	
104	RC910	
105	RC911	
106	RC912	
107	RC913	
108	RC914	
109	RC915	
110	RC916	
111	RC917	
112	RC918	
113	RC920	
114	RC921	
115	RC925	
116	RCP08	(1/10 1K)
117	RCP09	
118	RCP17	1/10 1K
119	RCP18	
120	RCP19	
121	RCP23	1/10 1K
122	RP01	1/4 1K
123	RP02	1/4 1K
124	RP03	1/6 1K
125	RP04	
126	RP05	

R SYSTEM (!)

P-B/G	PAL-B/G SECAM-L/L'	REMARK
←	TDA8362	MAIN VIF
	TDA8395	
37208MC-233SP	←	MICOM
←	←	VPS/PDC
	TDA9830	
←	TDA9802	SUB VIF
	TDA9830	
FAL2463/84	←	TUNER MAIN
FL2471/84	←	TUNER SUB
G1966M	←	
G1966M	←	
	L9461M	
	L9461M	
40.4MHz	40.4MHz	
TPS5.5	←	
SFE5.5	←	
TPS5.5	←	
SFE5.5	←	
←	33uF	AGC MAIN
	30pF	TRIMMER
	4.7uF	
	4.7uF	
←	33uF	AGC SUB
	47uF	
	100uF	
	4.7uF	
	4.7uF	
	100pF	
	1000pF	
	2200pF	
	10pF	
	0.1uF	
	0.22uF	
	0.1uF	
	0.22uF	
	100uF	
←		
	0.1uF	
	1000pF	
	1000pF	
	0.22uF	
	1000pF	
	1000pF	
	1S2186	
	1S2186	
	1S2186	
	1N4148	
	BB909A	
	5.1V	
	5.1V	
	1S2186	
	1S2186	
		INSU COVER
	WIRE COPPER	SECAM-L
	WIRE COPPER	SECAM-L
		B/G SOUND
		B/G SOUND
	10uH	
CW-4232	←	POWER CORD
	KTC 3197	
	KTC3198Y	
	KTC3198Y	
	KTC3198Y	
	KTA1266Y	
	KTC3198Y	
	KTA1266Y	
	KTC3198Y	
	KTC3198Y	
	KTC3198Y	
	KTC3198Y	
	KTC3198Y	
	KTC 3197	

NO.	SYSTEM / LOC.	P - I	P-B/G	PAL-B/G SECAM-L/L'	REMARK
73	R091			10KB	
74	R110			1/4 4.3K	
75	R202			1/4 4.7K	
76	R902			1/4 750	
77	R905			1/4 4.7K	
78	R906			1/4 22K	
79	RC106			1/10 100	
80	RC111			1/10 2.2K	
81	RC112			1/10 10K	
82	RC113			1/10 10K	
83	RC114			1/10 10K	
84	RC115			1/10 22K	
85	RC116			1/10 68K	
86	RC120			1/10 1K	
87	RC123			1/10 1K	
88	RC201			1/10 4.7K	
89	RC202			1/10 4.7K	
90	RC203			1/10 4.7K	
91	RC204			1/10 22K	
92	RC207			1/10 4.7K	
93	RC208			1/10 22K	
94	RC211			1/10 10K	
95	RC212			1/10 4.7K	
96	RC213			1/10 39K	
97	RC299			1/10 22K	
98	RC730			1/10 4.7K	
99	RC782			1/10 10K	
100	RC797	1/10 9.1K	←	1/10 6.8K	
101	RC901			1/10 4.7K	
102	RC908			1/10 10K	
103	RC909			1/10 68K	
104	RC910			1/10 10K	
105	RC911			1/10 22K	
106	RC912			1/10 100	
107	RC913			1/10 4.3K	
108	RC914			1/10 4.7K	
109	RC915			1/10 2.2K	
110	RC916			1/10 7.5K	
111	RC917			1/10 10K	
112	RC918			1/10 100K	
113	RC920			1/10 100K	
114	RC921			1/10 330	
115	RC925			1/10 4.7K	
116	RCP08	(1/10 1K)	←	←	VPS/PDC OPTION
117	RCP09				CLOCK OPTION
118	RCP17	1/10 1K	←	←	TEXT(WEST) ON
119	RCP18				TEXT TURKISH
120	RCP19				TEXT EAST
121	RCP23	1/10 1K	←	←	AV2 OPTION
122	RP01	1/4 1K			U-BAND OPTION
123	RP02	1/4 1K	←	←	S.VIEW OPTION
124	RP03	1/6 1K		1/6 1K	SP/LP OPTION
125	RP04			1/4 1K	SYSTEM OSD
126	RP05			1/4 1K	SCM-L OPTION

DIFFERENT PART FOR SIZE (!)

NO.	INCH / LOC.	20"	21"	REMARK
		ORION	ORION	
1	CRT	A48JLL90X02	A51JSW90X02	
2	D/COIL	DC-2050	DC-2070	
3	GROUND ASSY	48519A5110	48519A5310	
4	T402	DCF-2217J	DCF-2217L	FBT
5	C407	1.6KV 7500P	1.6KV 8200P	MYLAR
6	C408	2KV 220pF	2KV 270pF	
7	C409	200V 0.47uF	200V 0.33uF	MYLAR
8	R801	J503P54 D180M290	J503P53 D140M290L	POSISTOR
9	RC301	1/10 510K	1/10 220K	
10	RC304	1/10 820	1/10 680	
11	RC305	1/10 560	1/10 270	

RESISTOR

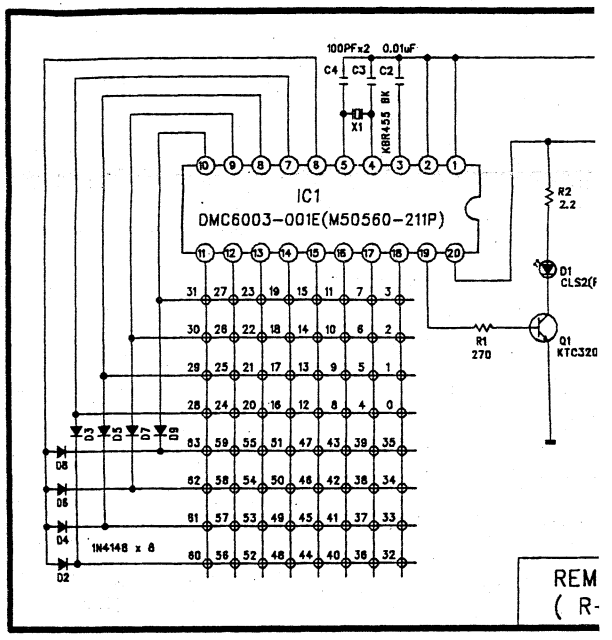
CARBON FILM	—ʌʌ—
M-OXIDE FILM	—⊗— [M]
CARBON COMP	—ʌʌ— (CC)
FUSIBLE	—⊗— (F)
CEMENT	—ʌʌ— (C)
R CHIP	—ʌʌ— RC___

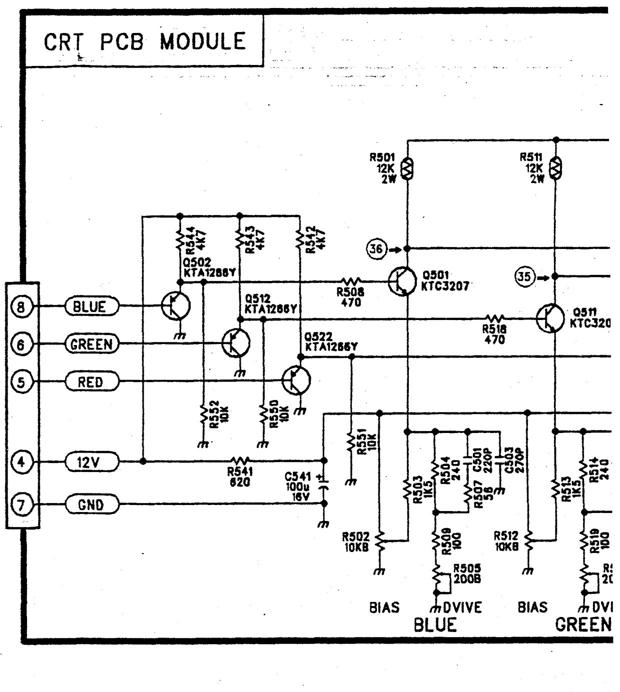
COIL

PEAKING	—⌒—
CHOKE	—⌒— (C)
BEAD	—⌒— (B)

CAPACITOR

ELECTRO	—|(—
CERAMIC	—||—
CERAMIC CH	—||— (CH)
TANTAL	—|(— (T)
ELECTRO NONPOLAR	—||— (NP)
MYLAR	—||— (M)
CHIP CERA	—||— CC___


100PFx2
0.01uF
C4
C3
C2
X1
KBR455 BK
IC1
DMC6003-001E(M50560-211P)
R2
2.2
D1
CLS2(
R1
270
Q1
KTC320
D3
D5
D7
D9
D8
D6
D4
D2
1N4148 x 8
REM
(R-


CRT PCB MODULE
BLUE
GREEN
RED
12V
GND
R544 4K7
R543 4K7
R542 4K7
Q502 KTA1266Y
Q512 KTA1266Y
Q522 KTA1266Y
R552 10K
R550 10K
R551 10K
R541 620
C541 100u 16V
R501 12K 2W
R511 12K 2W
36
35
Q501 KTC3207
Q511 KTC320
R508 470
R518 470
R503 1K5
R504 240
R507 56
C501 220P
C503 270P
R513 1K5
R514 240
R502 10KB
R512 10KB
R509 100
R519 100
R505 200B
BIAS
DVIVE
BLUE
BIAS
GREEN

P-B/G	PAL-B/G SECAM-L/L'	REMARK
	10KB	
	1/4 4.3K	
	1/4 4.7K	
	1/4 750	
	1/4 4.7K	
	1/4 22K	
	1/10 100	
	1/10 2.2K	
	1/10 10K	
	1/10 10K	
	1/10 10K	
	1/10 22K	
	1/10 68K	
	1/10 1K	
	1/10 1K	
	1/10 4.7K	
	1/10 4.7K	
	1/10 4.7K	
	1/10 22K	
	1/10 4.7K	
	1/10 22K	
	1/10 10K	
	1/10 4.7K	
	1/10 39K	
	1/10 22K	
	1/10 4.7K	
	1/10 10K	
←	1/10 6.8K	
	1/10 4.7K	
	1/10 10K	
	1/10 68K	
	1/10 10K	
	1/10 22K	
	1/10 100	
	1/10 4.3K	
	1/10 4.7K	
	1/10 2.2K	
	1/10 7.5K	
	1/10 10K	
	1/10 100K	
	1/10 100K	
	1/10 330	
	1/10 4.7K	
←	←	VPS/PDC OPTION
		CLOCK OPTION
←	←	TEXT(WEST) ON
		TEXT TURKISH
		TEXT EAST
←	←	AV2 OPTION
		U-BAND OPTION
←	←	S.VIEW OPTION
	1/6 1K	SP/LP OPTION
	1/4 1K	SYSTEM OSD
	1/4 1K	SCM-L OPTION

DIFFERENT PART FOR SIZE (!)

NO.	INCH / LOC.	20"	21"	REMARK
		ORION	ORION	
1	CRT	A48JLL90X02	A51JSW90X02	
2	D/COIL	DC-2050	DC-2070	
3	GROUND ASSY	48519A5110	48519A5310	
4	T402	DCF-2217J	DCF-2217L	FBT
5	C407	1.6KV 7500P	1.6KV 8200P	MYLAR
6	C408	2KV 220pF	2KV 270pF	
7	C409	200V 0.47uF	200V 0.33uF	MYLAR
8	R801	J503P54 D180M290	J503P53 D140M290L	POSISTOR
9	RC301	1/10 510K	1/10 220K	
10	RC304	1/10 820	1/10 680	
11	RC305	1/10 560	1/10 270	

RESISTOR

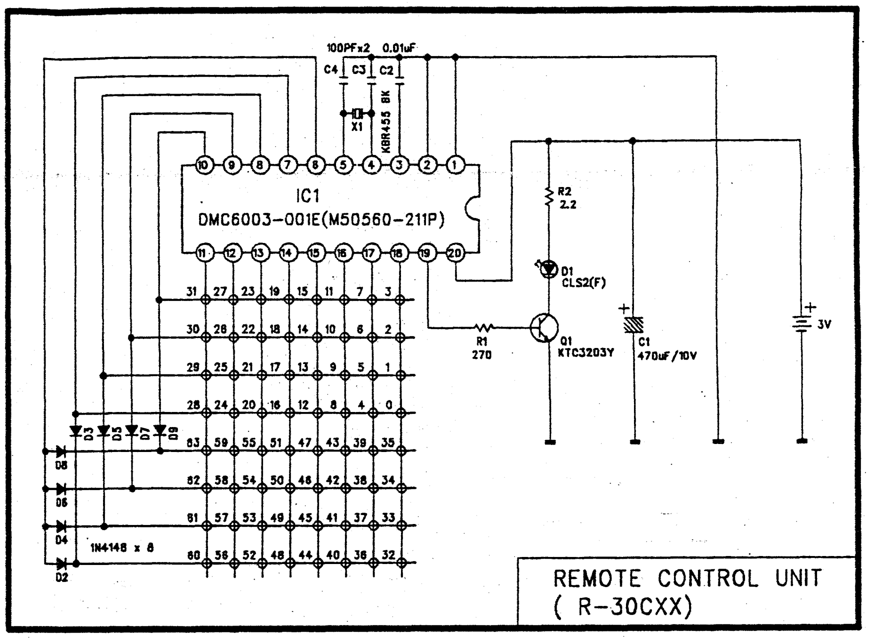
CARBON FILM	—ww—
M-OXIDE FILM	—⊗— [M]
CARBON COMP	—ww— (CC)
FUSIBLE	—⊗— (F)
CEMENT	—ww— (C)
R CHIP	—ww— RC___

COIL

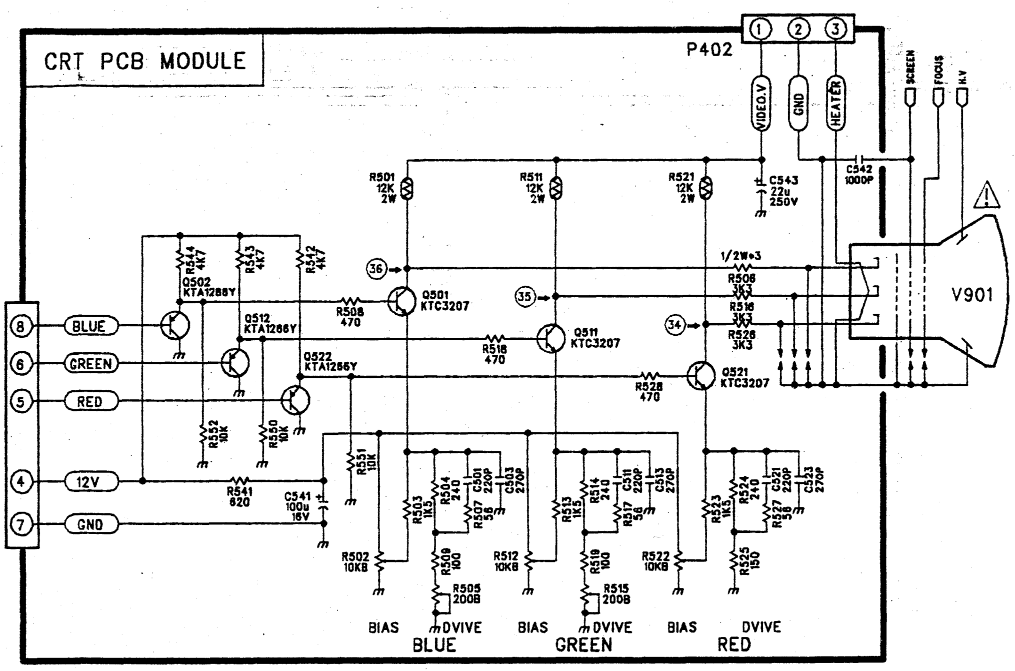
PEAKING	—⌒⌒—
CHOKE	—⌒⌒— (C)
BEAD	—⌒⌒— (B)

CAPACITOR

ELECTRO	—+|(—
CERAMIC	—||—
CERAMIC CH	—||— (CH)
TANTAL	—+|(— (T)
ELECTRO NONPOLAR	—||— (NP)
MYLAR	—||— (M)
CHIP CERA	—||— CC___


100PFx2
0.01uF
C4
C3
C2
X1
KBR455 BK
IC1
DMC6003-001E(M50560-211P)
R2
2.2
D1
CLS2(F)
R1
270
Q1
KTC3203Y
C1
470uF/10V
3V
D2
D3
D4
D5
D6
D7
D8
D9
1N4148 x 8

REMOTE CONTROL UNIT
(R-30CXX)


CRT PCB MODULE
P402
VIDEO.V
GND
HEATER
SCREEN
FOCUS
H.V
BLUE
GREEN
RED
12V
GND
R501 12K 2W
R511 12K 2W
R521 12K 2W
C543 22u 250V
C542 1000P
R544 4K7
R543 4K7
R542 4K7
Q502 KTA1266Y
Q512 KTA1266Y
Q522 KTA1266Y
Q501 KTC3207
Q511 KTC3207
Q521 KTC3207
R508 470
R518 470
R528 470
1/2W×3
R506 3K3
R516 3K3
R526 3K3
V901
R552 10K
R550 10K
R551 10K
R541 820
C541 100u 16V
R503 1K5
R504 240
C501 220P
C503 270P
R507 56
R513 1K5
R514 240
C511 220P
C513 270P
R517 56
R523 1K5
R524 240
C521 220P
C523 270P
R527 56
R502 10KB
R512 10KB
R522 10KB
R509 100
R519 100
R525 150
R505 200B
R515 200B
BIAS
DVIVE
BLUE
GREEN
RED